Chemical Week

November 13, 1954 Price 35 cents

Amid Gotham's glitter, a solid segment of the nation's chemical process industries . . . . . p. 18

Here's how a small company sets up a sales organization to render big-firm service . . . . . p. 55

Special adhesives turn the trick as "do-it-yourself" wallpaper battles latex paint . . . . . p. 70

Food, feeds, and bottles of capsules; they're all behind the vitamin surge . . . . . p. 89

Pfizer researchers: three among 800 as 35 countries' scientists swap antibiotics news . . . . p. 94

A McGRAW-HILL PUB

G
E P POWER
UNIVERSITY MICROFILMS IN
313 N 1ST ST
ANN ARBOR MICH

Quality Begins

1/3 of a mile below Westvaco Wyoming

Nature deposited millions of tons of unbelievably pure trona (sodium sesquicarbonate) below our Westvaco, Wyoming plant. We mine this unique mineral and refine it by patented processes into WESTVACO Soda Ash — an excellent product that equals or exceeds traditional synthetic process ash in both chemical and physical properties.

WESTVACO Soda Ash is distinguished for its unusual rate of dissolution, flowability and absence of fines. Thousands of tons of our Light and Dense Ash have been used with satisfaction.

Currently, our economic shipping limits are from the Mississippi to the Panhandle to the Pacific . . . with some deviations here and there due to the peculiarities of freight rates. If you are located in this area we will be glad to furnish technical data, working samples and prices on the grade you can best use.

WESTVACO SODA ASH

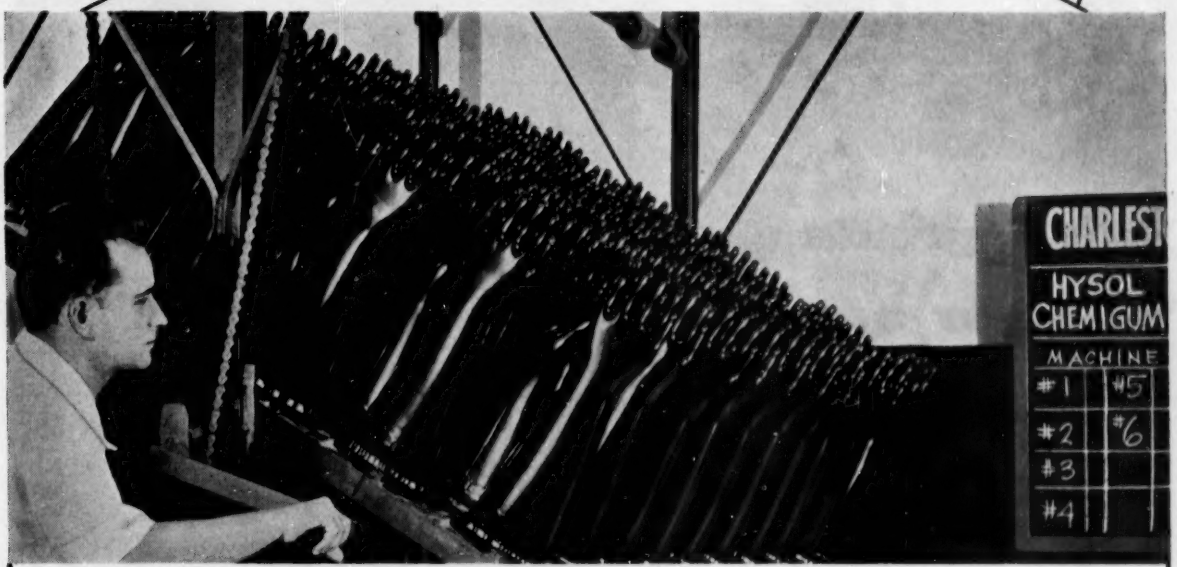
fmc Westvaco CHEMICALS

Westvaco Chlor-Alkali Division
FOOD MACHINERY AND CHEMICAL CORPORATION
General Offices · 161 East 42nd Street, New York 17
CHARLOTTE, N. C. • CHICAGO, ILL. • DENVER, COLO. • PHILADELPHIA, PA. • ST. LOUIS, MO.

It's Chemigum

that armors chemical workers longer

HELPING HANDS for chemical workers that stay on the job longer are these heavy-duty gloves of CHEMIGUM—the easy-processing nitrile rubber. They are made by multiple dipping the solution of rubber cement onto the porcelain forms. Photo courtesy Charleston Rubber Company, Charleston, S. C.



RUBBER gloves for chemical workers often have been a problem to their manufacturers. Ordinary rubbers cannot withstand the deteriorating effects of a number of chemicals, particularly oils, solvents and alkalies. Those few that can, usually are difficult to process.

Solution to the problem for one glove-maker came in the form of a solution of CHEMIGUM—the butadiene-acrylonitrile copolymer noted for its ease of processing and outstanding physical properties. This user found CHEMIGUM gave him faster, more uniform "breakdowns" on the mill and excellent solubility characteristics, *plus* resulting in a glove of superior chemical resistance and general durability.

Its use in gloves is another example of how smaller-baled, lighter-colored, easier-processing CHEMIGUM is helping many manufacturers to produce better, oil-resistant rubber products faster and more profitably. Details on how CHEMIGUM can help you are available from the greatest supplier of synthetic rubbers and related resins by writing to: Goodyear, Chemical Division, Dept. W-9417, Akron 16, Ohio.

CHEMICAL
GOODYEAR
DIVISION

"Hy-Sol"—T.M. Charleston Rubber Company

Chemigum, Pliobond, Pliolite, Plio-Tuf, Pliovic—T. M.'s The Goodyear Tire & Rubber Company, Akron, Ohio

Use-Proved Products—CHEMIGUM • PLIOBOND • PLIOLITE • PLIO-TUF • PLIOVIC • WING-CHEMICALS—The Finest Chemicals for Industry

You'll grade "F" style cans A+

We are pleasing some of the most particular people in the petroleum and chemical industries with our Tailor-Made Package Service. Why not let us do the same for you? We'll give you "F" style cans that are precisely right for your product . . . in the size you want . . . and lithographed to your taste. We'll deliver these cans when and where you say. And we'll make available expert engineering and research help in any quantity you can use. In all our dealings with you, we'll treat you as if you were our only customer.

CONTINENTAL CAN COMPANY

Continental Can Building
100 East 42nd Street, New York 17, N. Y.
Eastern Division: 100 E. 42nd Street, New York 17
Central Division: 135 So. La Salle Street, Chicago 3
Pacific Division: Russ Building, San Francisco 4

Chemical Week

Volume 75 **November 13, 1954** Number 20

OPINION	4	DISTRIBUTION	55
NEWSLETTER	9	SPECIALTIES	70
BUSINESS & INDUSTRY	13	MARKETS	85
PRODUCTION	40	RESEARCH	94

PUBLISHER ..... Wallace F. Traendly
EDITORIAL DIRECTOR ..... Sidney D. Kirkpatrick
EDITOR ..... W. Alec Jordan
MANAGING EDITOR ..... Howard C. E. Johnson
ASSOCIATE EDITOR ..... Donald P. Burke

DEPARTMENT EDITORS

Business & Industry: Jane H. Cutaia, Homer Starr, Joseph A. O'Connor • **Distribution:** Raymond H. Layer • **Markets:** Anthony J. Piombino • **Production:** Donald P. Burke, Michael L. Yaffee • **Research:** Ralph R. Schulz • **Specialties:** J. R. Warren • **Art and Editorial Make-up:** Donald R. Thayer • **Copy Editor:** William M. Mullinack

EDITORIAL ASSISTANTS

Robert C. Hosford • Charles Joslin • Joseph F. Kalina • Richard Ringheim Kay Sebiry • John M. Winton

NATIONAL NEWS

Atlanta, William Kearns • **Chicago,** Frank C. Byrnes • **Cleveland,** Robert E. Cochran **Detroit,** James C. Jones • **Houston,** James A. Lee • **San Francisco,** Elliot Schrier **Washington,** George B. Bryant, Jr. • **Finance & Statistics,** Douglas Greenwald, Robert P. Ulin • Correspondents in 55 principal cities

WORLD NEWS

J. K. Van Denburg (editor) • **London,** Edward W. S. Hull • **Paris,** John O. Coppock **Frankfurt,** Gerald Schroeder • **São Paulo,** Lionel Holmes • **Mexico City,** John Wilhelm **Tokyo,** Alpheus W. Jessup • **Manila,** Herbert Leopold • Correspondents in 44 capitals and principal cities

Chemical Week (including Chemical Specialties and Chemical Industries) is published weekly by McGraw-Hill Publishing Company, Inc., James H. McGraw (1860-1948), founder. Publication Office: 1309 Noble St., Philadelphia 23, Pa.

Executive Editorial and Advertising Offices: McGraw-Hill Building, 330 W. 42nd St., New York 36, N. Y. Donald C. McGraw, President; Willard Chevalier, Executive Vice-President; Joseph A. Gerardi, Vice-President and Treasurer; John J. Cooke, Secretary; Paul Montgomery, Executive Vice-President, Publications Division; Ralph B. Smith, Vice-President and Editorial Director; Nelson Bond, Vice-President and Director of Advertising; J. E. Blackburn, Jr., Vice-President and Director of Circulation.

Subscriptions to Chemical Week are solicited in the chemical and process industries from management men in administration, research, production and distribution. Position and company connection must be indicated on subscription order. Address all subscription communications to Chemical Week Subscription Service, 1309 Noble St., Philadelphia 23, Pa., or 330 W. 42nd St., New York 36, N. Y. Allow one month for change of address.

Single copies 35¢. Subscription rates—United States and Possessions $5.00 a year; $8.00 for two years; $10.00 for three years. Canada $6.00 for a year; $10.00 for two years; $12.00 for three years. Other Western Hemisphere and the Philippines $15.00 a year; $25.00 for two years; $30.00 for three years. All other countries $25.00 a year; $40.00 for two years; $50.00 for three years. Entered as second class matter December 29, 1951 at the Post Office at Philadelphia 23, Pa., under the act of March 3, 1879. Printed in U.S.A.

Copyright 1954 by McGraw-Hill Publishing Co., Inc.—All rights reserved.

Power Stainless Products Co.

MOST

Complete Stock of

STAINLESS

Steel Products

When you deal with Power, you're always sure of getting any stainless item anytime—because Power carries the most complete stock anywhere.

PIPE

Stainless • Aluminum • Saran

Fabricated to your requirements

VALVES

Stainless • Aluminum • Nickel • Lead • Monel

Featuring Stainless Steel Screwed and Flanged Valves

FITTINGS

Stainless • Aluminum • Saran

Featuring the Quality Lines — Camco Stainless Steel Screwed, Flanged and Welding Fittings . . .

Triclover Zephyrweld Fittings

TUBING

Stainless • Aluminum • Saran

Featuring—Stainless Tubing in all gauges and sizes

Speedy Delivery Everywhere!

"Specialists in Corrosion Resistant Materials"

Phone Now!

N.J.—GRegory 3-2100

N.Y.—PEnnsylvania 6-1388

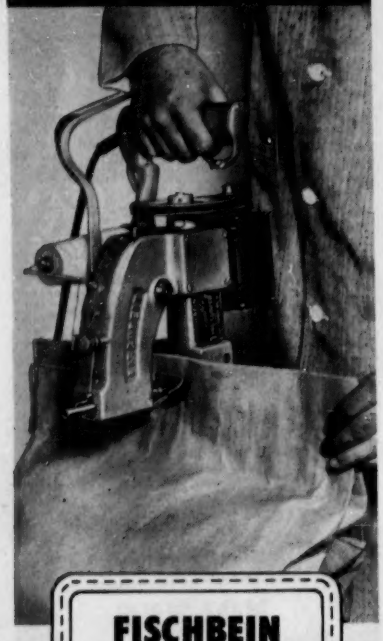
Phila.—GArfield 6-6448

POWER

STAINLESS PRODUCTS CO.

354 HARRISON ST. PASSAIC, N. J.

FOR
FAST, SECURE, LOW COST
BAG CLOSING



FISCHBEIN
Portable
BAG CLOSER

- A *truly* portable bag closer . . . Weighs only 10½ pounds.
- Requires no installation . . . plug into any outlet.
- Handles textile and paper bags.
- Simple to operate and maintain.
- Lowest priced bag closer on the market.

FOR DETAILS, MAIL THIS COUPON NOW

DAVE FISCHBEIN CO.
DEPT. 5E
38 GLENWOOD AVE. N.
MINNEAPOLIS, MINN.

Name.....
Firm Name.....
Address.....
City..... State.....

OPINION . . . . . .

Wages or Gift?

To the Editor: If, as the majority of the NLRB is quoted (*CW, Oct. 30, p. 11*), a stock plan is a form of wages, it must follow that, in companies having such a plan, the stocks plan *is* part of the wage. It must also follow in these companies, that part of the wage is the stock plan.

There are some people in this country who do not believe in any form of gambling—thus, these same people would not believe in buying stock.

Now, doesn't it follow that, if part of their wages is in stock ownership for which they are paying a certain part of their own money, these people are being forced to gamble—and then, are they not being discriminated against?

It can easily be said that they are not being *forced* to buy the stock; but, as shown above, if part of their wage *is* the stock plan, what substitute compensation is offered if they do not take it?

I, myself, am with a company that does not sell stock to its employees *at a discount*. However, we are given the privilege of buying its products at a substantial discount. Would the NLRB (majority opinion) consider this privilege to be part of our wages? If so, do you think that the employees could bargain through their union for greater discounts?

I happen to be one who would very much like a stock plan, but, if I were in management's position in all companies throughout the U.S.A., I would do away with *all* such plans after such a decision. After all, the stock owners are still the *owners* of the company; and what has come to pass in this country that the *owners* are being forced to *sell* part of *their company* to their employees at a rate lower than the market value?

J. P. Mehrlust
Chicago

Mexican Sulfur

To the Editor: Difference of opinion makes the horse race. And my desire is to find out who won this one.

In your CW Report (*Oct. 30*) written by Dr. Robert Frank the following paragraph appears:

"One such potential source of supply is Mexican sulfur. Figures of 1 million tons/year of sulfur production in Mexico have been bruited about freely. But sulfur people here feel that it's years away, wouldn't be too surprised if it didn't materialize at all. . . ."

In the same issue (*p. 18*) the following news note appears: "Pan American Sulphur Co. has just brought two sulfur wells into operation in Mexico. Yield: 600 tons sulfur/day. Located at Jaltipan (on the isthmus of Tehuantepec in southern Veracruz) the units cost $5 million. Port facilities, now under construction at Coatzacoalcos are being built to handle some 500 tons of sulfur hourly."

From this information it appears that two new sulfur wells are producing 600 tons/day, equivalent to 200,000 tons/year; and that the port facilities, when completed, will handle 500 tons/hour, equivalent to more than 4 million tons/year. . . .

These two items are contradictory. What have you got to say for yourself? Please don't print my name and company association. . . .

Name Withheld

No contradiction, really, as a close rereading will establish. Port facilities are not synonymous with output. —Ed.

Blighted Outlook

To the Editor: A publication such as yours should have more sense than to print such discouraging views as you did in your editorial "Realistic Look at the Farm" (*Oct. 23*). Many well-managed chemical companies have invested many dollars in agricultural chemicals . . . which will help to provide jobs for a lot of people. . . . Depressing editorials such as yours can shake the faith of stockholders in the acumen of the management.

This is certainly, no matter how you try to justify it, no way to encourage the industry to progress and be even moderately venturesome. . . . Yet it has been this spirit of venturesomeness that has been the key to the American way of life, the mainspring of free enterprise. . . . Anyone who does anything to dampen this spirit or corrode this mainspring is not being "realistic" but rather just plain pessimistic.

You can't argue that we are not going to need a lot more food as the years go by. And to produce more food the farmers are going to need a lot more fertilizers and insecticides.

CW welcomes expressions of opinion from readers. The only requirements: that they be pertinent, as brief as possible.

Address all correspondence to: W. A. Jordan, Chemical Week, 330 W. 42nd St., New York 36, N. Y.

. . . . . .

It is true, as you must know, that this is the only solution to our problem of feeding more people because there is very little land left that can be made arable at a reasonable cost. . . .

The function of a magazine as responsible and influential as yours should be to inspire and encourage and not to discourage. I have been angered by what you said about farm prospects and I think that you should recant. . . .

IRVING S. LAPIDUS
Buffalo, N.Y.

It is true enough that all the facts we cited did not delineate a roseate—or inspirational—picture. But facts they were. And, as we said in the concluding paragraph of the editorial, "The long-term outlook is not discouraging. Those companies that have geared their agricultural chemical outlook to the long-term view may well expect to have their confidence justified and their foresight rewarded. But that doesn't mean that next year and the year after are not going to be hard selling years. Any producer who does not have his thinking attuned to that reality might well attune it now."—ED.

On Target

TO THE EDITOR: . . . That is indeed an excellent "Target"—a method to make wood dimensionally stable (*CW, Oct. 23, p. 44*). . . .

We have tried our hand at it and, we believe, with some success. . . . This stems from our experience with our silicone resin-base water repellent for masonry walls. . . .

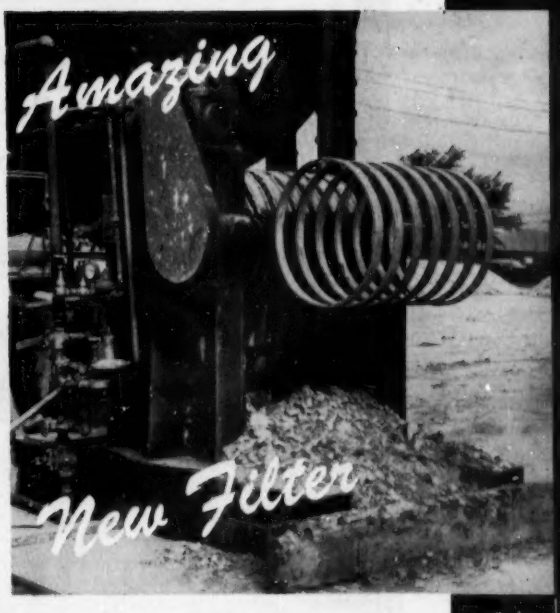
We believe that our modified silicone resin holds a dimensional stability of 40 to 80% on most types of wood and at costs more favorable than those you cited. . . .

May I express our appreciation of CW, which has helped us in many ways. . . .

R. LYLE BRACE
President
Crown Chemicals Co., Inc.
Chicago

Unfair Trade?

TO THE EDITOR: . . . I have just read the news article that you published on fair trade, "Drive Against Discounts" (*Oct. 30, p. 13*) which says that "appeals are going out this week to congressmen, state legislators, from the National Assn. of Retail Druggists for preservation and strengthening of 'fair-trade' codes in law and in practice . . ."



THE EIMCO BURWELL

Plate and Frame Filter users will appreciate this new Eimco filter because it does EASILY so many of the jobs that were long tedious tasks on the conventional Plate and Frame Filter.

Take for instance the long job of opening and closing — now, with the Eimco, it's a matter of push-button control with instant response, takes no time at all.

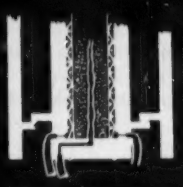
Cleaning, which may take hours on the conventional machine, requires no down time on an Eimco, simply rotate the cleaned frame into position and start filtering again.

You get several times the washing efficiency with an Eimco over conventional plate and frame filters. The split cake which is evenly formed over the entire surface of each plate is washed by introducing the wash water through the feed port. Thus both surfaces of filter media are utilized for the outward passage of wash liquor, instead of only one surface as on conventional plate and frame filter. Washing efficiency is, therefore, at least doubled.

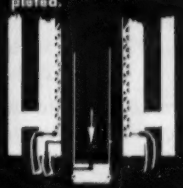
One hundred square feet of filter area on an Eimco Burwell filter is equal to 5, 10 or 20 times that amount of area on a conventional plate and frame filter.

Write for complete information.

Plates open to allow frame to enter and position for filtering.



Plates closed on frame — in this position the feed, wash and blow portion of the cycle are completed.



Plates open to allow filled frame to move down and out.

EIMCO

THE EIMCO CORPORATION

Salt Lake City, Utah—U.S.A. ✱ Export Offices: Eimco Bldg., 52 South St., New York City

New York, N. Y. Chicago, Ill. San Francisco, Calif. El Paso, Texas Birmingham, Ala. Duluth, Minn. Kellogg, Ida. London, Eng. Paris, France Milan, Italy

885

Beckman

ratio-recording Spectrophotometer

ultraviolet — near-infrared

The Beckman Ratio-Recording Spectrophotometer brings the chemist a unique combination of the true double beam principle with single photo-receiver and amplifier. Utilizing a high-frequency beam chopper and switching system, it exploits such advantages of ratio recording as freedom from drift and line variation—and at the same time avoids problems of phototube matching and aging.

Combining the proven principles of the Beckman Model DK with a completely new Beckman-designed recorder, a new degree of flexibility has been achieved. Multi-speed recording and scale expansion allow the operator to make every analysis at optimum efficiency. The automatic drive can be disengaged at any instant should the analyst wish to explore certain regions manually.

For maximum detection sensitivity over the entire 220 to 2850 mμ range the instrument uses a photomultiplier detector at the lower wavelengths and a lead-sulfide cell in the near-infrared. Available as a complete instrument or as an attachment for existing Model DU Quartz Spectrophotometers.

Resolution—0.3 mμ at 220 mμ; 2.5 mμ at 1000 mμ; 5 mμ at 2500 mμ — higher than any other instrument in its price range.

Scanning Speeds—3, 6, 12, 24 minutes *and* 10 times each interval.

Fastest scanning speed covers the visible region in 20 sec., near-infrared in 40 sec. Very low speeds provide extreme resolution.

Recording Features—Scale expansion—selectable factors of 1, 2, 4, or 8.

Preprinted 11 x 17 easy-to-file charts—also available in Ozalid reproducible paper.

See your Beckman dealer or write for Data File 99-17.

Beckman *division*

BECKMAN INSTRUMENTS, INC.

FULLERTON 1, CALIFORNIA

OPINION . . . . . .

"In addition, NARD members are being urged to help put more zeal into enforcement of existing laws by filing lawsuits themselves if manufacturers fail to ask for injunctions against 'discount house' drug stores."

What's fair about this? This sort of stuff makes me see RED. Please cancel my subscription to CW . . .

RUSSELL MCGILL
U.S. Navy Ordnance Labs
Silver Spring, Md.

We, as reporters and interpreters of the news, plead not guilty to any charge of unfairness. CW does not censor the news; the fact that we report a happening—and we strive to report fairly—does not, of course, mean that we either endorse or disapprove of what happens.—ED.

Sulfuric Report

TO THE EDITOR: . . . I was most impressed by your excellent report by M. Frank on the sulfuric acid future (*Oct. 30*) . . . a most forward-looking contribution . . .

J. L. MONTIER
Lyons, France

DATES AHEAD . . .

National Paint, Varnish and Laquer Assn., annual meeting, Palmer House, Chicago, Nov. 15-17.

National Foreign Trade Council, annual convention, Waldorf-Astoria hotel, New York, Nov. 15-17.

Magnesium Assn., annual meeting, Chase hotel, St. Louis, Nov. 15-17.

Armed Forces Chemical Assn., annual dinner meeting, Savoy Plaza hotel, New York, Nov. 17.

Industrial Hygiene Foundation, annual meeting, Mellon Institute, Pittsburgh, Nov. 17-18.

Federation of Paint and Varnish Production Clubs, annual meeting, Palmer House, Chicago, Nov. 18-20.

Manufacturing Chemists' Assn., semi-annual meeting and winter conference, Statler hotel, New York, Nov. 23.

Chemical and Plastic Industries Equipment Salon, Parc des Expositions, Paris, France, Dec. 2-12.

American Pharmaceutical Manufacturers' Assn., combined midyear and Eastern section meeting, Waldorf-Astoria hotel, New York, Dec. 6-8.

Chemical Specialties Manufacturers Assn., annual meeting, New Yorker hotel, New York, Dec. 6-8.

American Institute of Chemical Engineers, annual meeting, Statler hotel, New York, Dec. 12-15.

PROGRESS THRU RESEARCH . . . at GENERAL MILLS

Fast, Practical Curing Polyamide-epoxy Resins

Fatty Amines: Top Ore Collectors ☆☆☆☆☆ Fatty Acids Lower Grease Cost

As a maker of pottings, castings, moldings or embedments could you use a resin formulation that cures internally, has negligible shrinkage and requires no toxic, volatile, or explosive curing agents?

Try a blend of General Mills Polyamide and epoxy resins. They are two thermoplastic resins that emerge to give you unique thermosetting benefits.

You may combine General Mills Polyamide Resins and the epoxies to get materials ranging from soft and tacky to extremely hard and tough —merely by varying the ratio of the two resins (Polyamide Resin 115—epoxy ratios of 50/50 to 30/70). In its hardest form, this blend shows a valuable combination of impact strength, adhesion, and toughness. In its softest form, it combines extreme adhesion and flexibility.

Polyamide-epoxy blends form rugged potting and casting compounds with close conformation to mold surfaces, thereby producing moldings with excellent finish. Polyamide Resin serves as both a curing agent and modifier. No extra curing agents of harmful or volatile character are essential. Also no volatile reaction products are produced during curing.

These resin blends cure amber-clear and bubble-free. They have low exotherm (heat of reaction), high dielectric strength (approximately 3000 volts per mil at 60 cycles), and are resistant to water, salt spray, grease, oils, and most solvents and common chemicals.

Large castings (8 pounds or more) are self-curing and need no external heat. Small castings and moldings require some heat for best results. A typical cure for small sections is 10 minutes at 300° F.

Pot life of Polyamide and epoxy resins is longer than for an equivalent mass of monomeric amine-cured resins. Polyamide resins can also be held at high temperatures for long periods without harm, and are stable for long-term storage.

☆☆☆☆☆

General Mills Fatty Amines are being used increasingly as effective collectors for beneficiation of minerals.

The glass cloth laminate sections above are of equal thickness and glass content. Unlike the polyester, left, the Polyamide-epoxy laminate at right cures relatively clear and bubble free. Its affinity and wetting action on glass produce a stronger laminate with superior water resistance.

Alamine (fatty amine) 26, for example, and its corresponding amine acetate (Alamac 26) have proved highly effective for the flotation of such minerals as phosphate, feldspar, mica and spodumene. Recent work has demonstrated potential utility in the iron ore field. That's because these fatty nitrogen compounds are cationic surface active agents which adsorb strongly on silicious, or other negatively charged surfaces.

Alamine 26 and Alamac 26 contain a high proportion of the active primary amine component. Both are soluble in most organic solvents (such as alcohols and aromatic hydrocarbons). The amine is insoluble while its acetate is soluble in water. Both are readily dispersible in water.

For more information on fatty amines for beneficiation of the above ores, mail coupon below.

Grease Manufacturing is evolving, today, into an industry offering specialized lubricants for increasingly complex and expensive machinery. That's why the formulating superiority of General Mills fatty acids is winning out with grease makers all across the country.

Many, for example, favor General Mills Aliphat (fatty acid) 26-B, fractionally distilled tallow fatty acid. Its stearic acid content is high and myristic acid is almost completely removed. Thus, Aliphat 26-B is used for making lime and soda base greases—because its use results in noticeably higher yields.

Glycerine and muscilaginous impurities have been removed. You get up to 5 per cent more reactive materials than in whole fats, faster saponification, fewer off-grade batches, and up to 20% higher grease yields.

SEND THIS COUPON:

PROGRESS THRU RESEARCH

General Mills ☆☆☆☆☆ CHEMICAL DIVISION
KANKAKEE, ILLINOIS

Please send me additional information on the General Mills products checked below.

☐ Polyamide Resin 115 (for use with epoxy resins) ☐ Fatty Amines
☐ Fatty Amine Acetates ☐ Fatty Acids (for use in ore flotation)
☐ Fatty Acids for grease-manufacturing

Name_____

Firm_____

Address_____

City_____ State_____

HARSHAW TABLETED CATALYSTS made stronger through RESEARCH

Rugged Tablets Reduce Reactor Shutdowns

Taken at 1/20,000th of a second, the pictures show a Harshaw catalyst tablet being tested for strength—one step in our research program designed to produce more efficient tableted catalysts having the highest useful strength. Our goal, of course, is to make the catalyst you want and need. First you specify, and then we *produce*.

Tougher, more efficient catalysts mean fewer reactor shutdowns, and, naturally, more economic operation for you. *Harshaw* Catalysts mean fewer reactor shutdowns.

If your mind's on catalysts please contact us today by phone or letter.

Harshaw catalysts available in these forms:

Tablets • Powders • Extrusions • Spheres
Granules • Rings, and Flakes

THE HARSHAW CHEMICAL CO.
Cleveland 6, Ohio

CHICAGO • CINCINNATI • CLEVELAND • DETROIT • HOUSTON • LOS ANGELES • NEW YORK • PHILADELPHIA • PITTSBURGH

NEWSLETTER

"This year . . . we got off to a good start. Next year we hope to do even better." Thus did Manufacturing Chemists' Assn. President William Foster sum up the first Chemical Progress Week last spring (*CW, May 15, p. 44*) and look ahead to the second one, next May 16-21, MCA's board of directors will sponsor it, but, like this year emphasis will be on local activities, especially in communities where plants are located.

•

Don't expect any additional fast tax write-offs as a result of Office of Defense Mobilization's recent checkup on certificates.

It was originally thought that ODM would issue new certificates in place of those not used. But now ODM figures its expansion goals for most commodities were high enough to allow for some deficit; moreover, considerable expansion has taken place without fast amortization.

•

If process water is a prime factor in your consideration of plant sites, or if you sell water treatment chemicals or equipment, ion-exchange resins, and the like, take a look at two new U. S. Geological Survey reports. They give up-to-date information on the water supply of 1315 U. S. cities, including chemical analyses, ownership, sources and storage facilities.

•

The government's synthetic rubber plant salesmen are more than half done with their job. They've negotiated with bidders on some 270,000 long tons of rubber capacity—almost 55% of the facilities to be sold. So far, B. F. Goodrich is the only one of the "Big Five" rubber companies to complete a deal with the disposal commission.

•

It looks like a head-on collision between charges and replies in the $5-million damage suit filed last week in Federal District Court at Newark, N. J., against Selman Waksman of streptomycin fame, Rutgers Research & Endowment Foundation, and Merck & Co., licensed maker of streptomycin under the Waksman-Schatz patent.

Plaintiff Mary Marcus—who says that she has been doing original research work on actinomycetic organisms since 1923—asserts that she gave Waksman the information and samples of actinomycetic cultures that he used in developing the noted antibiotic; and that Waksman wilfully infringed the patent that was issued to her in 1937.

Rutgers President Lewis Jones—speaking for Waksman and the foundation—denies that Miss Marcus' charges have "the slightest legal, scientific, or moral foundation." A Merck spokesman said the Marcus patent—which expires in just two more weeks—is directed to a polyvalent vaccine "which has no bearing on streptomycin."

•

The government's General Services Administration will spend $43 million to boost capacity of the Nicaro nickel plant from 4000 to 7000 tons/day of ore. Construction work will get under way next month.

Nickel Processing Corp., largely owned by National Lead, operates the plant at Levisa Bay, Cuba. Its contract with GSA expires in 1956, at which time the government will decide whether to sell the plant to a private operator or continue leasing it.

Catalin Corp. of America is striving to thwart Henry Reichhold's plans to sit on its board of directors (*CW, Nov. 6, p. 14*). Catalin turned down his bid, said, "To do otherwise would be to violate . . . the antitrust laws."

Next likely move: Reichhold will counter.

•

The Food & Drug Administration's antibiotics division would like to see all antibiotics brought under the division's inspection and certification requirements.

At present, only five antibiotics and two of their derivatives are required to be inspected and certified: penicillin, streptomycin, dihydrostreptomycin, chloramphenicol, chlortetracycline, tetracycline, and bacitracin. Not required to be inspected and certified are such new antibiotics on the market as erythromycin, Terramycin, neomycin, and polymycin.

The division estimates that 40% of drugs sold in the U.S. today for the treatment of disease are antibiotics.

Originally anxious to have their antibiotics tested by the division for certification prior to sale, most manufacturers are now expressing the feeling that such inspections and certificates are not necessary, and would like to have removed from such regulations the antibiotics already required to be inspected and certified. The division, however, is more anxious than ever, for uniformity, to get all antibiotics under the certification regulation.

Defeated in 1949 was a general act requiring all present and future antibiotics to be inspected before certificates were issued. All new antibiotics must now be brought under the regulation individually.

•

Availability of crude oil and oil products on the West Coast will be studied by a new consultant group. Monsanto President Charles Allen Thomas has been appointed by Defense Mobilizer Arthur Flemming to head it up. This move apparently stems from repeated urgings for a crude oil pipeline from west Texas to Los Angeles. Sponsor of this project, West Coast Pipeline Co. (Dallas, Tex.), is asking, in addition to the tax write-off certificate it now has, some type of government underwriting to guarantee a break-even for the line.

•

Some scattered fluoridation returns from last week's balloting:

Palo Alto, Calif., voters turned out to approve fluoridation 7560 to 6214 after a bitter fight.

Meanwhile, just 10 miles south of Palo Alto, Sunnyvale voters were rejecting fluoridation by a scant 376 votes (out of 3240). Sunnyvale had to return $8000 worth of equipment bought on consignment two years ago when the city council voted to fluoridate the city's water supply. At that time a citizens' committee circulated an initiative petition demanding the issue be put to a vote before fluoridation was started.

Voters at Boulder, Colo., also repudiated action of their city council by voting 3127 to 2395 against fluoridation.

Only one other community, Mountain Home, Ark., approved of the practice; the rest—Salem, Ore.; Meadville, Pa.; Greensboro, N. C.; Birmingham, Ala.; Atlantic City, N. J.; and Fremont, Neb.—turned down fluoridation proposals.

. . . The Editors

HOW HERCULES HELPS...

Most businesses are helped today by Hercules' business . . . the production of synthetic resins, cellulose products, chemical cotton, terpene chemicals, rosin and rosin derivatives, chlorinated products, and many other chemical processing materials—as well as explosives. Through close cooperative research with its customers, Hercules has helped improve the processing or performance of many industrial and consumer products. We welcome the opportunity to work with you.

BEAUTIFUL BUT TOUGH—"Saucy Walker" greets "Mary Hartline", famed star of TV. Both dolls are members of the ever-popular Ideal Toy family. Molded with Hercules Hercocel® Cellulose acetate, the dolls have that combination of beauty and durability that spells increased sales . . . happy children . . . satisfied parents.

ONE PAINT IN A HUNDRED—Toronto's new $50,000,000 subway is modern in every way, including its glistening tile walls and brightly painted ceilings. For the ceiling, a paint was needed that could resist high humidity. More than 100 were tested and a paint based on Hercules Parlon® (chlorinated rubber) selected. On all types of surfaces, interior and exterior, Parlon paints are providing outstanding service at lower long-term cost.

FOR A WHITE HOT RECIPE—Pouring molten metal to produce castings weighing 30 tons or more places a heavy demand on the sand. Molds and cores for steel and cores for iron "stay put" when bonded with Truline® binder. Yet cores are easily removed when metal has set. And Truline means cores can be baked in half the normal time, preventing foundry oven bottlenecks; reducing man hours per ton.

HERCULES

HERCULES POWDER COMPANY
INCORPORATED
992 Market Street, Wilmington 99, Delaware
Sales Offices in Principal Cities

Call for a straight pitch!

INLAND COAL TAR PITCH

As a fibre pitch, electrode binder, paint base or for any other soft carbon pitch use, it's right over the plate every time. Inland Coal Tar Pitch starts with high grade coal from Inland's own mines, travels straight through our own cleaning, coking and chemical plants. Experienced Inland people keep quality high at every step. For fast delivery of a good straight pitch—priced right—order from Inland now.

Call Inland for all your coal chemical needs

Xylol	Pyridine
Creosote Oil	(crude)
Benzol	Naphthalene
Toluol	Carbolate
Ammonium	Phenolate
Sulphate	Pitches

INLAND COAL CHEMICALS

INLAND STEEL COMPANY—38 So. Dearborn St., Chicago 3, Illinois

Sales Offices: Chicago • Milwaukee • St. Paul • Davenport • St. Louis • Kansas City • Indianapolis • Detroit • New York

BUSINESS & INDUSTRY. . . .

CHEMICAL COMPANY EARNINGS

(in dollars; 000 omitted)

	SALES			PRETAX EARNINGS			NET AFTER TAXES			EARNINGS PER SHARE
	1954 Third Quarter	1953 Third Quarter	% Change	1954 Third Quarter	1953 Third Quarter	% Change	1954 Third Quarter	1953 Third Quarter	% Change	1954 9 Mo.
Air Reduction	31,120	32,682	− 4.5	3,195	750	−14.8	1,570	1,818	−13.6	1.42
Allied Chemical	127,658	139,635	− 8.8	111,028	116,326	− 4.5	9,221	12,019	−23.2	3.57
American Cyanamid	97,244	89,769	8.3	12,734	10,850	−17.4	6,434	5,650	13.9	2.17
Atlas Powder	14,252	14,692	− 3.0	1,331	1,544	−13.8	650	567	14.6	2.97
Commercial Solvents	11,368	13,289	−14.5	774	1,597	−51.5	446	813	−45.1	.65
Diamond Alkali	23,030	22,067	4.4	2,398	2,476	− 3.1	1,214	1,274	− 4.8	1.74
Dow*	107,823	110,504	− 2.4	17,510	22,232	−21.2	8,544	9,763	−12.5	1.07
Du Pont	410,460	440,039	− 6.7	133,586	164,531	−18.8	71,646	58,071	23.4	4.74
Freeport Sulphur	.....	.....	....	3,460	2,493	38.7	2,750	1,910	44.0	3.13
Hercules	48,042	46,831	2.6	7,972	7,814	2.0	3,613	2,884	25.3	3.89
Heyden	12,577	18,182	−30.8	1,104	2,165	−49.0	568	1,010	−43.8	.20
Hooker†	11,012	9,349	17.8	1,937	1,903	1.8	948	846	12.1	2.61
Merck	35,787	40,973	−12.6	6,760	7,465	− 9.4	3,109	3,819	−18.6	.81
Monsanto	83,109	82,593	0.6	9,484	11,525	−17.7	5,011	6,184	−19.0	3.04
Nopco	5,288	4,877	8.4	735	663	10.9	352	221	59.3	1.98
Olin Mathieson	122,311	118,683	3.1	15,156	20,807	−27.1	7,623	9,104	−16.3	2.17
Pennsalt	15,107	15,501	− 2.5	1,577	1,391	13.4	885	600	47.5	2.14
Parke, Davis	27,984	28,736	− 2.6	4,987	4,806	3.7	2,495	2,411	3.4	1.44
Chas. Pfizer	36,060	31,036	16.2	5,793	6,498	−10.9	3,978	3,156	26.0	2.19
Pittsburgh Coke	8,663	13,501	−35.8	550	1,636	−66.4	248	680	−63.5	.32
Rohm & Haas	31,152	28,254	10.2	6,256	4,370	43.1	2,743	1,448	89.4	9.24
Spencer	6,754	6,367	6.1	1,312	2,137	−38.6	661	869	−23.9	3.37
Texas Gulf Sulphur	22,027	18,722	17.7	12,019	10,172	18.2	7,868	5,714	37.7	7.00
Union Carbide	231,987	254,710	− 8.9	41,461	63,196	−34.4	21,343	26,419	−19.2	2.18
Victor	10,208	10,732	− 4.9	1,686	2,114	−20.2	888	863	2.9	1.61

* Three month period ending Aug. 31.
† Fiscal year starts Dec. 1.

Profits Forecast: Fair to Rising

Net profits were unsettled in the third quarter of 1954, but most chemical companies are predicting a definite upsurge within the next three months. Taxes were off; sales were mixed; earnings per share were slightly lower than in the same period in 1953.

"As in preceding quarters this year," most companies note, earnings comparisons with 1953 strongly reflect the expiration of excess profits taxes. Companies like Du Pont and Atlas reported lower sales for the third quarter (−6.7% and −3.0%, respectively), but saw net profits jump 23.4% and 14.6%.

Bright Outlook: Also indicative that business is picking up again: the volume of chemical sales increased in September from a low reached in August, and the improvement continued in October.

A few companies (one is Diamond Alkali) have already registered nine-month sales record highs; others predict that "when the fourth quarter returns are in, 1954 will go down in the firm's history as the year of most profitable business."

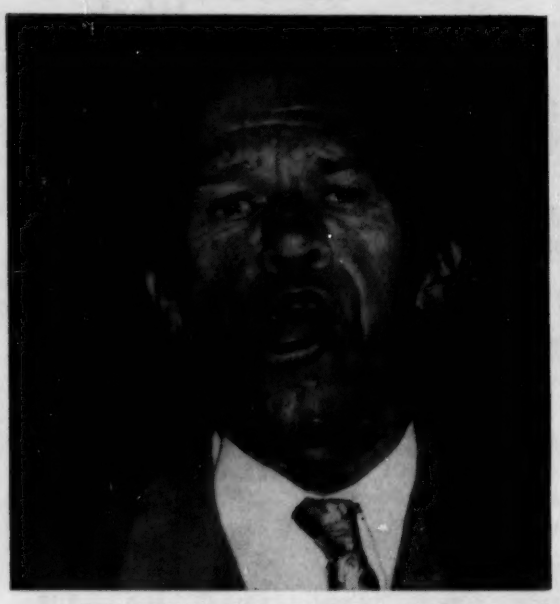
Correction of inventories, and high capital expansion charges are listed by some companies as the reasons for lower earnings this year than last. Heavy start-up costs (such as International Minerals & Chemical Corp. encountered in getting its Bonnie, Fla., phosphate plant in operation) is cited by others as the cause of a drop in profits.

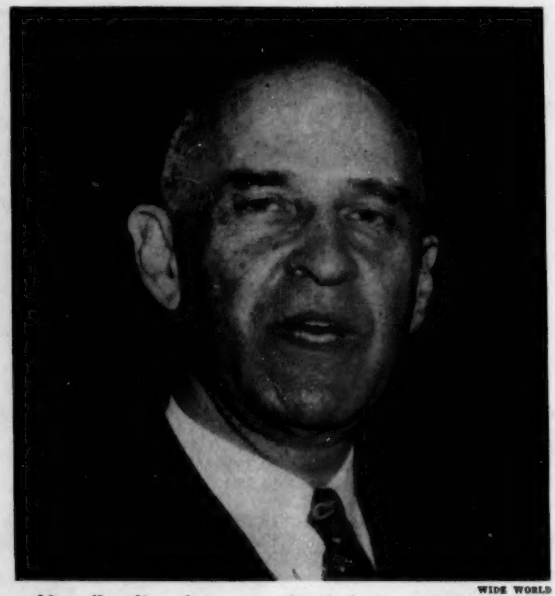
Consensus, however, among most chemical companies as Thanksgiving approaches is that the industry has been in a transitory period since the second quarter of 1953—and that the storm has been weathered.

"Operating expenses are generally up; expenses incurred in increased activity in research and development are increasing," points out one major producer, "but the outlook ahead is very good."

"We don't expect the current resurgence to be a false start, either," agrees a West Coast firm. "Major economic indicators now point to a fast pace in 1955."

"Favorable tax legislation and depletion allowances will aid us considerably this year," agrees another. "Next year, provided legislation is not seriously amended, net profits should be very good—perhaps, in many sectors of the chemical industry they may even set all-time records."





WIDE WORLD

REP. PRIEST AND SEN. HILL: Their chairmanships could spell policy changes to chemical management.

For Better or Worse, the Direction Shifts

When the Democrats eked out control of the Senate last week in one of the closest election finishes in years, chemical men throughout the country faced this puzzler: What will Democratic control mean to pending legislation; and what will be its effect on their companies?

The switch in the House of Representatives, it was clear, would nail down key committee chairmanships for a number of men who hold diametrically different views from those of their Republican predecessors. Moreover, defeated at the polls were representatives and senators who had particularly influenced past legislation.

Perhaps the most important man on the Hill when the 84th Congress meets, as far as specific chemical legislation is concerned, will be Rep. Percy Priest of Nashville, Tenn. He is slated to take over, from New Jersey's Charles Wolverton, chairmanship of the House Interstate & Foreign Commerce Committee—which holds primary responsibility for legislation on food additives, water fluoridation, food and drug laws, federal regulation of barge traffic, and some aspects of air and water pollution control.

Priest, a liberal Democrat, has been one of the party's top strategists during the past few years, has served as Democratic whip in the House.

On the Senate side, Lister Hill of Alabama—also a liberal Southern Democrat—will be chairman of the Labor & Public Welfare Committee, which handles the food and drug legislation in the Senate.

But whether food additive laws will be stiffened, whether the government will decide to step into the water fluoridation fracas, and whether it will crack down on air and water pollution, will rest mainly with Priest—since in such matters, Senate committees usually accept pretty much the provisions of bills as they are passed in the House.

Foreign Programs Bolstered: The President's program to relax foreign trade barriers will probably get a boost, thanks to Democratic control of the House. Last year's attempts to initiate progressive tariff cuts and other steps to reduce international trade blocks were stymied, mostly because of the rugged dissent of House Ways & Means Committee Chairman Dan Reed. But next year's chairman (Rep. Cooper of Tennessee, who was one of the majority members of the Randall Committee) is known to be a strong supporter of a three-year reciprocal trade agreements extension, will probably go along with the President on a number of other proposals.

More Funds Probable: For the Food & Drug Administration, the new Democratic control of both House and Senate is virtually a guarantee of expanded activities. Food & Drug suffered a better-than-10% cut in funds below President Eisenhower's request —due to the Old Guard's pull on the purse strings. Now under Priest and Rep. John Fogarty (D., R.I.), chairman of the subcommittee on Health-Education-Welfare, there is every indication that FDA will get all the money it requests.

Here's the Tickler: On taxes, mergers, and antitrust probes, Democratic control may augur problems for chemical companies. House Democrats are likely to balk at corporate relief proposals due to come from the Treasury Dept., Congressman Celler (D., N.Y.), new chairman of the House Judiciary Committee, is sure to be tough on mergers.

Federal development of the Columbia River hydroelectric potential may be speeded up, too, as a result of last week's elections. One of the leading issues in Democrat Richard Neuberger's extremely close victory in Oregon's senatorial race was the private-vs-public power fight. Defeated Republican Guy Cordon has consistently espoused the private power cause during his 10½-year tenure in the Senate, is said to have been one of the architects of the President's partnership policy. With Neuberger replacing him, the Eisenhower Administration loses one of its strongest backers, and it seems likely that the electroprocess industry in the Pacific Northwest can soon expect some revision in the direction of a public power build-up.

It adds up to a change of direction —one that chemical men will watch closely in the months ahead.

Speed-up on Smog

Amid clear signs of increased interest in the problem of unclear skies in various parts of the country, there's speculation this week that the federal government may further boost the amount of money it will spend on air pollution research.

Partly as a result of the furor over the smog situation at Los Angeles (*CW Newsletter, Nov. 6*), extra funds for this work may be transferred to the Public Health Service, which this year will spend $130,000 in measuring and identifying air pollutants.

This may be helpful to chemical companies trying to curb contamination from their own plants, and also to equipment makers who have been working on air pollution control apparatus. There's general agreement on the need for much more scientific and engineering research on pollution, its causes and its cures.

WIDE WORLD

H-E-W'S ROCKEFELLER: A helping federal hand, but cities must do most.

Pollution and Politics: A shift in wind direction broke up last month's smog ceiling over Los Angeles, but two events kept the subject in the public mind there last week. One was the election, in which the candidates felt impelled to take stands on what the state and local governments should do about air pollution. (Gov. Goodwin Knight, who advocated a $100,000 appropriation for smog research rather than more restrictive rules for industry, was re-elected handily.)

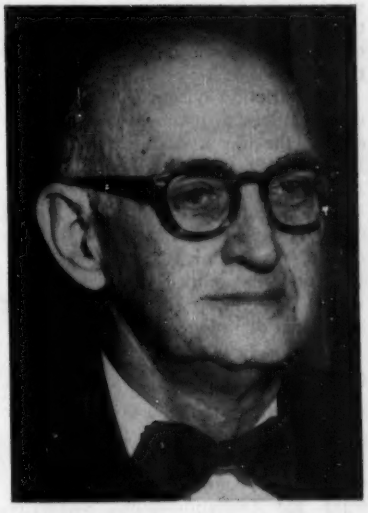
The other smog reminder for Angelenos was the semi-annual technical conference of the Air Pollution Control Assn., held in Los Angeles' Biltmore hotel late last week. President of APCA is Gordon Larson, who is again under fire as Los Angeles County's smog control director. County Supervisor Herbert Legg wants to hire a new man to head the antipollution program but keep Larson as head of research. The supervisors voted that same move last December, but never carried it out.

The neighboring city of Pasadena will be host to the third National Air Pollution Symposium next April 18-19. Sponsors of this meeting: Stanford Research Institute, California Institute of Technology, University of Southern California, University of California at Los Angeles, Southern California Air Pollution Foundation, and the Air Pollution Control Assn.

Probes and Progress: Not that Los Angeles County has any monopoly on concern over air pollution:

- At New Orleans, the city council's safety and property chairman, Victor Schiro, has appointed a fact-finding committee to gather information about air pollution in Orleans and three adjacent parishes, then recommend the kind of pollution control agency that should be organized.
- In Chattanooga, Tenn., a Chamber of Commerce committee is launching "an intensive study of Chattanooga's air pollution" following a charge that the city's air pollution control board had permitted a nuisance to continue in nearby Alton Park. The accuser was believed to have been alluding to an electric furnace ferromanganese plant operated by Tennessee Products & Chemical Corp.
- Philadelphia's observance of "Cleaner Air Week" included an exhibition in the city hall courtyard of equipment used by the Air Pollution Control Division and a display in a department store window of instruments used in taking air samples. Theme of the week: the progress made by the division this year in enforcing the city's "strongest and most workable ordinance and regulations" on air pollution control.

These activities are applauded by Nelson Rockefeller, Undersecretary of the Dept. of Health, Education & Welfare, who holds that "primary responsibility" for controlling air pollution should rest with state and local governments. He feels, however, that research is definitely one of the "certain supporting functions" that the federal government can and should undertake; and if H-E-W's present budget won't permit shifting funds to Public Health Service for this purpose, a special appropriation request probably will be sent to Congress.



ICWU'S MOFFETT: By next March, an end to union's internal woes.

Normalcy, No Splinter

Predicting the failure of the "splinter movement" on the part of members who sided with outgoing President H. A. Bradley at the International Chemical Workers Union (AFL) convention last August in Chicago, incoming President Edward Moffett foresees that his union will be back to normal before next spring.

Internal health of ICWU is of concern to management at numerous chemical plants, because new contracts might have to be negotiated if any local unions split away from the parent group. In some cases, special plant elections might be ordered by the National Labor Relations Board.

"We may have a month or two of rough going early in 1955," Moffett told CW, "but by March the organization will be on its feet again. Further, I believe that 1955 will bring us more progress than we've had in any one previous year since the founding of the union."

'Lame Duck' Regime: Interviewed in his lawbook-lined office in Houston, Tex.—where he's continuing to serve as head of the union's Texas-Louisiana district until his term as president begins on Jan. 1—Moffett expressed confidence that the union will withstand the friction that's bound to be felt during a "lame duck" interregnum.

"I believe the various forces in the ICWU are uniting in spite of the efforts of Bradley and his employees to divide the organization by setting up another union," Moffet declared. "I'm highly gratified at the response I've had from the field from people who opposed my

election to the presidency. Many of them have written pledging their cooperation with the incoming administration."

That friction within the union still exists—at least at the top—was observed during the recent AFL convention in Los Angeles, when Moffett and other ICWU delegates were challenged by Bradley. But the AFL rejected that challenge and seated the Moffett delegation, thus implying recognition of the fact that the ICWU executive board—headed by Moffett—is already in control of union affairs.

COMPANIES. . . .

First step in getting the Muscle Shoals chlorine caustic plant of Diamond Alkali into production was taken last week as the company awarded a contract for "rehabilitation." Recently purchased by Diamond from the government, it was built in 1950-52 to meet an anticipated chlorine shortage. It has been held in stand-by condition ever since.

•

More company incorporations:

- Hercules Plastics Corp. has filed a charter of incorporation in Dover, Del. Capital listed: $125,000.
- Texas Butadiene & Chemical Corp. has filed a charter of incorporation in Dover. No capital listed.
- Pilot Plastics, Inc. has filed in Dover. Authorized capital: 5000 shares of stock, no par value.
- American Minerals & Chemical Corp., United States Minerals & Chemical Corp., and National Minerals & Chemical Corp. have registered with the secretary of state in Delaware to do business in Wisconsin, each showing authorized common stock of 10 shares, par $10.
- Palmetto Plastics Co., has filed a charter of incorporation in Columbia, S.C., listing capital stock of $6000.

•

Food Machinery & Chemical Corp. (San Jose, Calif.) has set up a new division with plant and laboratory facilities at Baltimore, Md., to take over the insecticide chemical business and related production of U.S. Industrial Chemicals Co.—recently acquired from National Distillers Products Corp.

To be known as the Fairfield Chemical Division, it will operate as a separate unit, will supplement Food Machinery's Westvaco, Ohio-Apex, Niagara Chemical, and Buffalo Electro-Chemical divisions.

•

Key Chemical Corp., Washington, D.C., has bought an 8-acre industrial site in Medley, Fla.—just north of Miami Springs. Reported price: $25,000.

•

Heyden Chemical Corp. has acquired all of the stock of Nuodex Products Co., Elizabeth, N. J., for $2.8 million. Heyden made a cash payment of $2.6 million plus 9500 shares of Heyden common stock; book value of the net tangible assets acquired: $2.3 million.

EXPANSION. . . .

Triple Superphosphate: Western Phosphates Inc. is adding a second concentrator to its phosphoric acid line at Garfield, Utah. Scheduled for completion by spring '55, it will double the plant's total triple superphosphate and ammonium phosphate capacity, may also provide some phosphoric acid for sale. Cost: in excess of $4 million.

•

Alumina: Kaiser Aluminum & Chemical Corp.'s $27-million expansion program at Baton Rouge, La., is nearing completion. The new facilities will raise alumina capacity to over 800,000 tons/year, will enable Kaiser to increase its total primary aluminum capacity to 400,000 tons/year.

•

Plastics: Acheson Dispersed Pigments Co.'s Texas Division will build a $500,000 plant at Orange, Tex. A 10-acre tract has been purchased near the city limits of West Orange (within the tract known as "chemical row"). Construction will start immediately; the plant is scheduled for completion sometime in 1955.

•

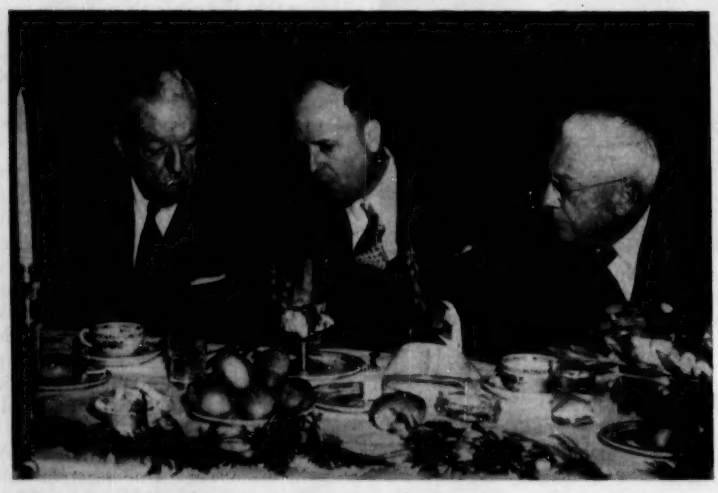
Paint: The Glidden Co., Cleveland, has started a $500,000 expansion at its Atlanta, Ga., plant. Present paint capacity is 1.5 million gal./year; company officials say the addition will boost production some 60%.

•

Acetylene Products: General Aniline & Film Corp. has broken ground for its $6-million acetylene chemicals plant at Calvert City, Ky.

•

Cellophane: Olin Mathieson Chemical Corp. will build a second plant to manufacture cellophane at Olin, Ind., on the Wabash River between Covington and Danville, Ind. Site clearance and grading have started; the plant will be in operation sometime during the last half of 1956.



Get-Acquainted in Baltimore

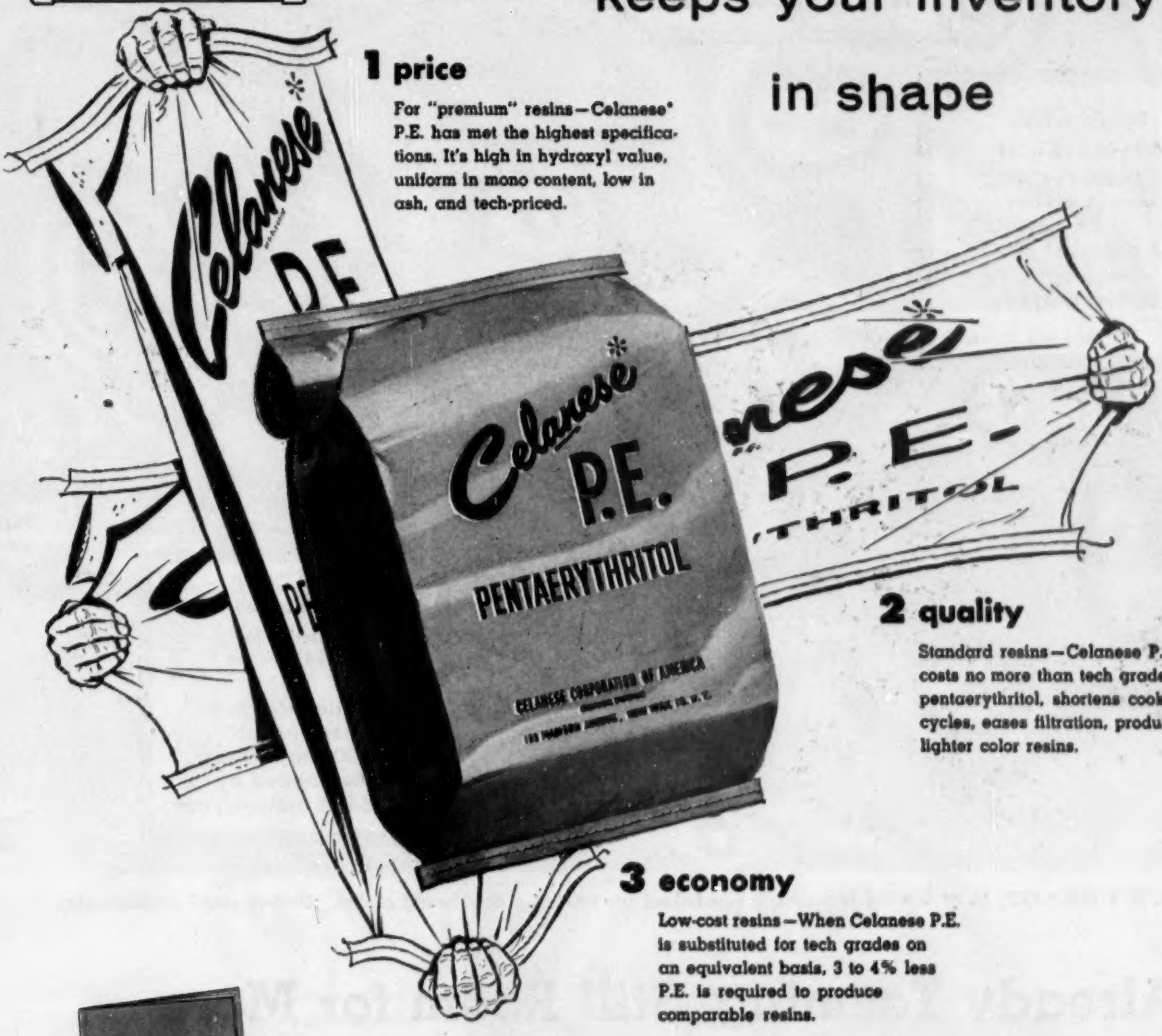
WHEN OFFICIALS of W. R. Grace & Co. gathered in Baltimore last fortnight to meet Maryland businessmen, a circle came full round. Almost a century and a quarter ago, W. T. Davison founded the company known today as Davison Chemical Co. At the same time (as J. Peter Grace, Jr., tells Chester Hockley, left, and Marlin Geiger, right) William Russell Grace was getting his start in shipping guano from South America to the U.S. Now joined, the two companies will unite shipping-fertilizer activities.

Celanese Tech. Service & Applications Labs
WE'RE TAKING OUR LABS
TO CHICAGO . . .
BRING YOUR PROBLEMS TO BOOTH 14
1954 PAINT INDUSTRIES' SHOW

the pentaerythritol with the 3-way stretch keeps your inventory in shape

1 price

For "premium" resins—Celanese* P.E. has met the highest specifications. It's high in hydroxyl value, uniform in mono content, low in ash, and tech-priced.



2 quality

Standard resins—Celanese P.E. costs no more than tech grade pentaerythritol, shortens cooking cycles, eases filtration, produces lighter color resins.

3 economy

Low-cost resins—When Celanese P.E. is substituted for tech grades on an equivalent basis, 3 to 4% less P.E. is required to produce comparable resins.

"MUST READING"

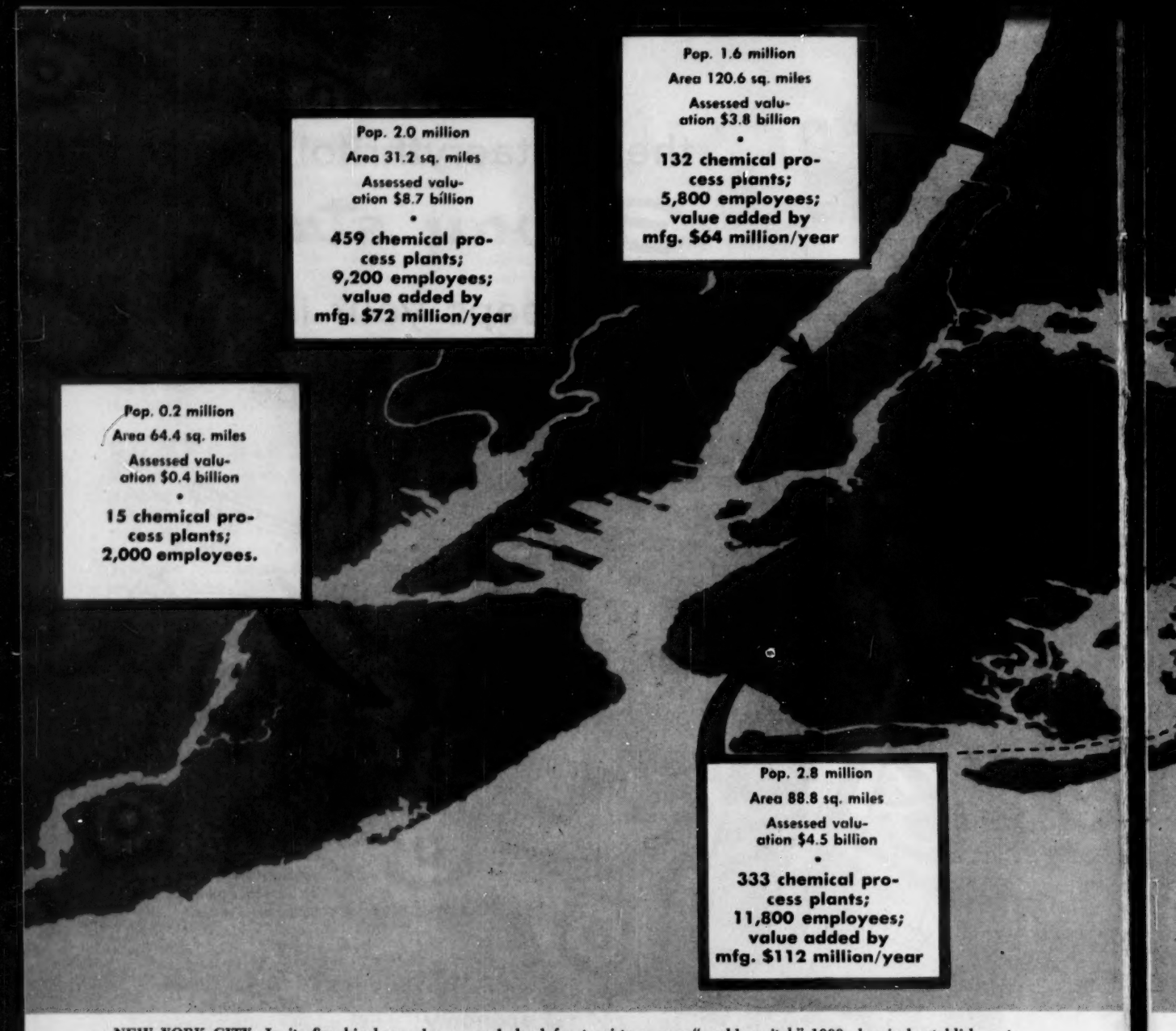
The new Celanese P.E. bulletin supplies solid reasons why it pays to switch to Celanese P.E. Complete with test formulations, comparisons, and cost analyses. Please write to Dept. 652-K.

With equal emphasis today on quality, price, and inventories, Celanese P.E. is just what alkyd resin manufacturers have been looking for—an all-purpose pentaerythritol that combines higher purity and uniformity with real production economy.

Celanese Corporation of America,
Chemical Division,
180 Madison Avenue, N. Y. 16.

*Reg. U. S. Pat. Off.

Celanese* CHEMICALS


Pop. 1.6 million
Area 120.6 sq. miles
Assessed valuation $3.8 billion
•
132 chemical process plants; 5,800 employees; value added by mfg. $64 million/year
Pop. 2.0 million
Area 31.2 sq. miles
Assessed valuation $8.7 billion
•
459 chemical process plants; 9,200 employees; value added by mfg. $72 million/year
Pop. 0.2 million
Area 64.4 sq. miles
Assessed valuation $0.4 billion
•
15 chemical process plants; 2,000 employees.
Pop. 2.8 million
Area 88.8 sq. miles
Assessed valuation $4.5 billion
•
333 chemical process plants; 11,800 employees; value added by mfg. $112 million/year

NEW YORK CITY: In its five big boroughs, a wonderland for tourists, a new "world capital," 1000 chemical establishments.

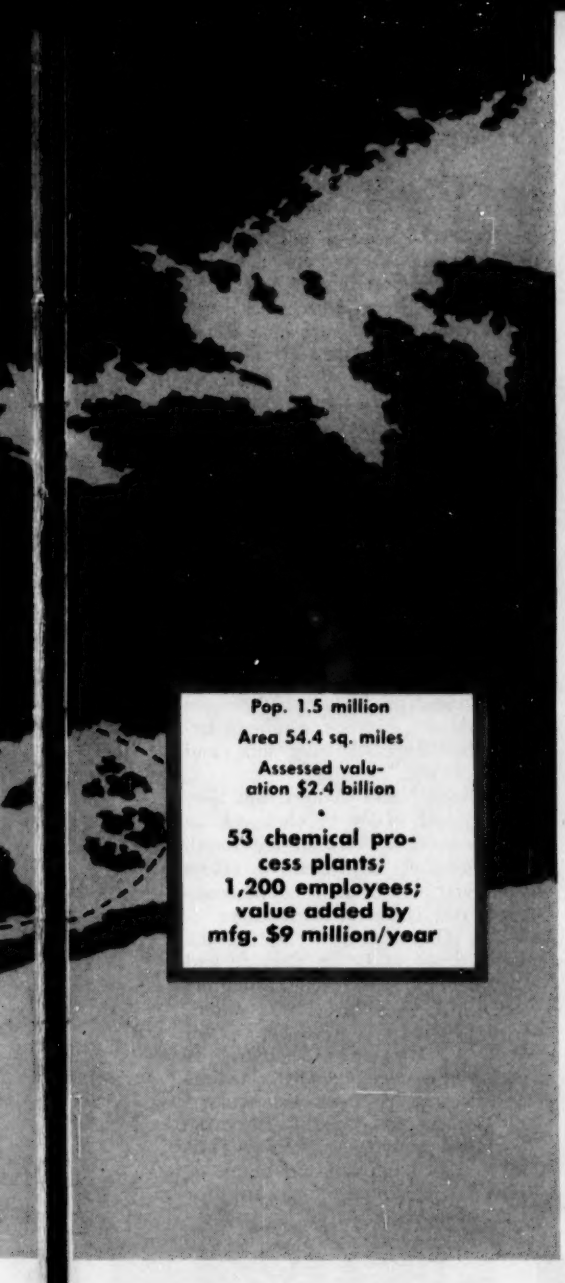
Already Teeming, Still Room for More

Chemical companies are still welcome to move into the big town; but while most other cities are striving to outdo each other in enticing more chemical firms to come in and settle down, New York City this week is stepping up its efforts to hold on to its present corporate residents.

So far, it appears that this hulking American Babylon will hold its own for many years as home base for more chemical process concerns than any other city in the world, despite a few recent incidents that led some pessimistic prophets to predict a rising exodus of company activities from this city of skyscrapers.

But just to play safe, Mayor Robert Wagner has instructed his newly constituted City Dept. of Commerce —headed by former Ambassador Richard Patterson, Jr.—to "place special emphasis on more intensified cooperation" with business people. The aim: to discover early anything that might make a New York company want to relocate, then have those thorns removed.

Markets, Suppliers, Water: There's still plenty of room for chemical plants in various parts of this 301-year-old city, particularly on Staten Island and in Queens; and there are numerous advantages for chemical manufacturers in New York. Most obvious: nearness to the nation's biggest consumer and industrial markets, to many sources of supply, and to the world's busiest seaport.



Pop. 1.5 million

Area 54.4 sq. miles

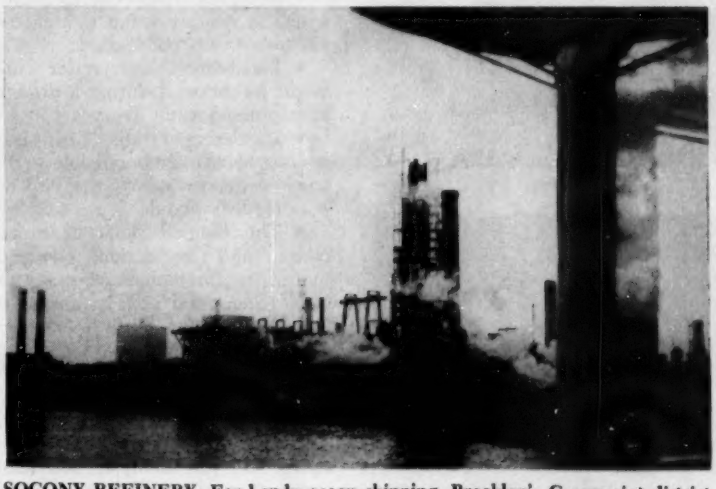
Assessed valuation $2.4 billion

•

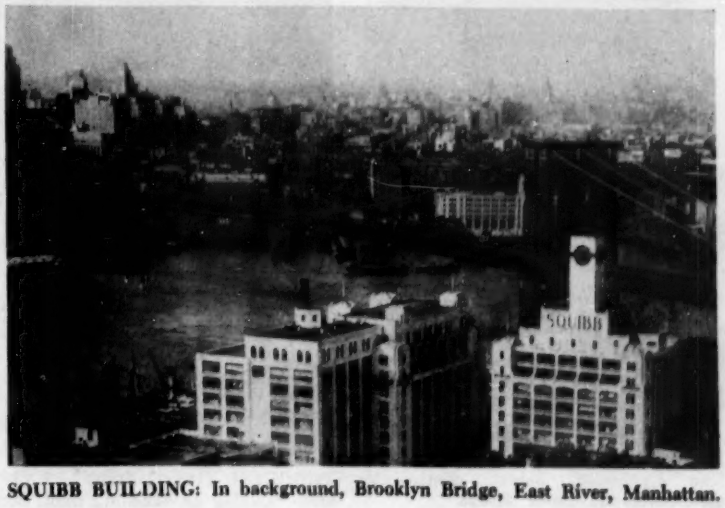
53 chemical process plants; 1,200 employees; value added by mfg. $9 million/year

FREDERIC LEWIS

ALL UP IN THE AIR: For many small plants, a home in the lofts.



SOCONY REFINERY: For handy ocean shipping, Brooklyn's Greenpoint district.



SQUIBB BUILDING: In background, Brooklyn Bridge, East River, Manhattan.

Other arguments for New York City as a base for industrial operations come from manufacturers who were asked why they returned to New York after having tried to operate their businesses in other areas. Their reasons:

- New York has soft water with low salt content.
- Small towns often lack fire protection, yet have higher rates.
- In small towns, people take time off for sports, harvesting and other activities without regard to employers' production schedules.
- New York, with its heterogeneous population, has a greater degree of

Story begins on p. 18

AT TOP, towering central structure of 70-story RCA building, home of American Cyanamid; below, modernistic glass-enveloped Lever House.

tolerance than the small town with fixed views and local customs.

- Labor unions eventually follow to any new location.
- New York has a huge supply of skilled and unskilled manpower.
- Small towns have limited transportation facilities.
- In small towns, it's often difficult to get spare parts for plant equipment.

Few Large Plants: But the fact is that there are only three chemical processing plants with more than 1000 employees apiece—Pfizer, Squibb, and Procter & Gamble—in New York City's five boroughs now, and little likelihood that more such plants are in store for the near future. Principal factors keeping this number down:

- Relatively high state and local taxes, including workmen's compensation insurance.
- Stringent rules—enforcement of which is steadily being tightened—on air and stream pollution.
- Possibility that water usage might be rationed during a drought—as happened some five years ago.
- Increasing traffic congestion, making it virtually impossible to make truck deliveries across the city on a reasonable schedule.
- The tangled skein of building codes and regulations, requiring numerous inspections, licenses and fees. (Suggested as a means of cutting this Gordian knot: a centralized Dept. of Inspections.)

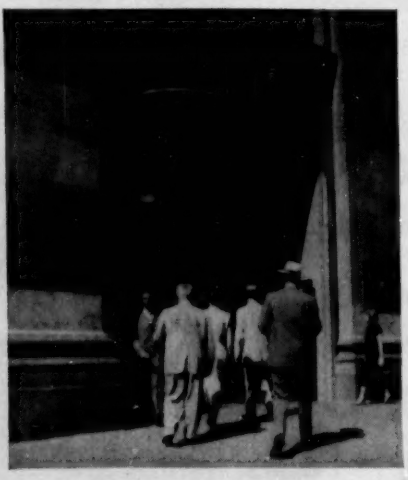
World Cosmetics Capital: New York, on the other hand, appears to be a haven for small chemical plants, particularly in the specialties fields. There are, for example, 105 manufacturers of cleaning and polishing preparations in the five boroughs; 141 pharmaceutical producers; and 151 makers of paints and varnishes.

The city is even more of a mecca for purveyors of "glamor" aids. In business here at the latest count are 172 makers of perfumes, cosmetics, and other toilet preparations—everything from "razorless shaving powder" to Chanel No. 5.

Also swelling the city's gross chemical output are some 50 producers of soaps and glycerin; about three dozen makers of printing inks (for which there's a towering local market because of the city's many book, magazine and newspaper publishing houses); and more than 100 plants turning out a miscellany of "chemicals and chemical products not elsewhere classified"—for instance, synthetic fatty acids, silver soldering flux, and "shark chasers."

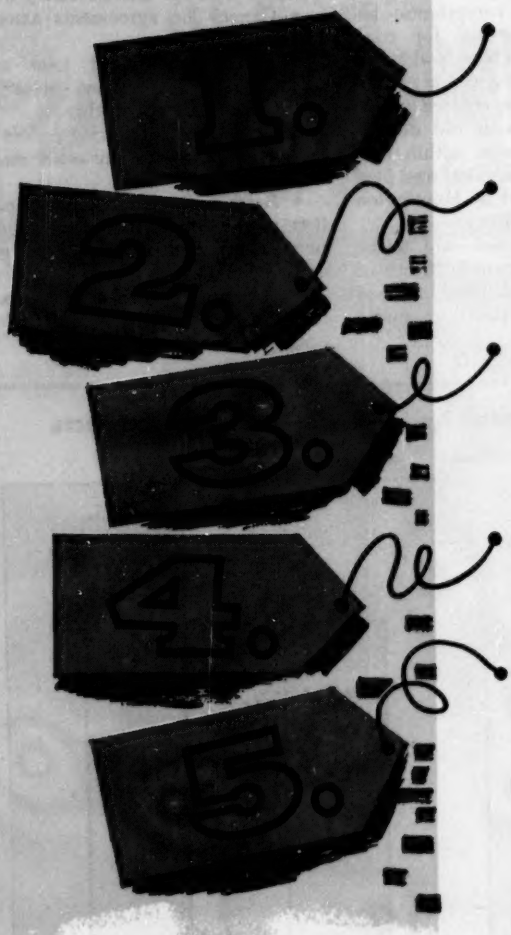
Corporate Nerve Centers: But New York's major claim to chemical industry eminence rests on the formidable number of executive offices maintained here by most of the country's largest chemical corporations.

From Grand Central Station—the neighborhood of Union Carbide and General Aniline & Film headquarters—down to the financial district—where Allied Chemical & Dye and Grace Chemical hold forth—the island of Manhattan is teeming with chemical enterprises large and small. Among their reasons for locating executive offices here: tumultuous old New York City is the communications center of the world, its capital sources are tops in the hemisphere.



THROUGH THESE PORTALS: At left, entrance to Union Carbide's 20-story office building on 42nd St.; right, door to Allied offices on Rector St.

Do your present lacquer solvents meet these Ketone advantages...?



High purity . . . *at no extra cost.* You add the latent solvents *you* prefer.

Unsurpassed ease of formulation—for both nitrocellulose and vinyl types.

Gives solutions of exceptionally high solids content—or high diluent content, both aromatic and aliphatic.

Imparts excellent flow, blush resistance, high gloss.

Price advantage, too! Lower specific gravity favors *you* when you buy by the pound and sell by the gallon.

WRITE FOR THE COMPLETE STORY!

These five important advantages are yours when you use Shell Ketones. Lacquer solvent systems based on Ketones have so many inherent advantages they have become standard with the nation's foremost formulators of both nitrocellulose and vinyl lacquers.

The Shell "quality group" of solvents includes MEK, MIBK, MIBC and IPA . . . for maximum flexibility in formulating. Ask your Shell Chemical representative why Ketones are your best solvent buy.

SHELL CHEMICAL CORPORATION

CHEMICAL PARTNER OF INDUSTRY AND AGRICULTURE

380 Madison Avenue New York 17, New York

Atlanta • Boston • Chicago • Cleveland • Detroit • Houston • Los Angeles • Newark • New York • San Francisco • St. Louis
IN CANADA: Chemical Division, Shell Oil Company of Canada, Limited • Montreal • Toronto • Vancouver

4
RESEARCH CENTERS TO SERVE YOU

Stauffer CHEMICALS
SINCE 1885

Four research centers permit Stauffer to decentralize research and development to suit the needs of industry and agriculture in different areas of the country. East *and* West are represented in Stauffer's research program and laboratories are located close to the industries they serve.

Stauffer... guaranteed by its name!

STAUFFER CHEMICAL CO.
380 Madison Ave., New York 17, N.Y.
221 North LaSalle Street, Chicago 1, Illinois
636 California St., San Francisco 8, California
326 South Main Street Akron 8, Ohio
824 Wilshire Blvd. Los Angeles 14, California
8901 Hempstead Road Houston 8, Texas
N. Portland, Ore. Weslaco, Tex. Apopka, Fla.

Color Compromise

Obtaining compliance with the law without making too much of a show out of individual cases appears to be the government's present policy in enforcement of the antitrust laws.

In the Justice Dept.'s latest action involving chemical companies, the suit has been settled by compromise before the case came up for trial. American Cyanamid (New York) and Standard Ultramarine & Color (Huntington, W. Va.) have entered into a consent settlement with the department's antitrust division within four months after the complaint was filed in U.S. District Court at Huntington (*CW, July 17, p. 34*).

Those two companies—said to be the country's only manufacturers of ultramarine blue—had been accused of making agreements to fix prices on that product and on laundry blue in the U.S. and in certain foreign markets, and to allocate sales of those products in various areas here and abroad.

Justice Dept. officials say the consent judgment will end the alleged "restraint of trade" situation. It requires Cyanamid and Standard to:

- Cancel the agreements asserted to be illegal.
- End their use of joint sales agents, and refrain from acting as sales agents for each other.
- Refrain from referring orders for the two products to any other manufacturer.
- Refrain from exchanging price lists before any price changes have been announced to the trade generally.
- Stay out of such agreements in the future.

IMPACT

More hospital beds, more chemical products

*Includes all hospitals registered with the American Medical Assn.

Market in Maladies

THE RISE in number of hospital beds in the U.S. in recent years has signaled a corresponding growth in sales of certain chemical products (apart from medicinals). The average 3000-bed hospital consumes 900 gal./year of 95% ethyl alcohol in the operating room, 1000 gal. in its service laboratories, 4500 gal. in room care. Liquid soap requirements: 15,000 gal./year; liquid disinfectants: 14,000 gal.

That means total sales of alcohol for hospitals: 3.35 million gal., sales for liquid soap: 7.87 million gal.; sales for liquid disinfectants: 7.34 million gal./year.

The Biggest News in tank cars since the all-welded car!

acf built

DURADOME

Flued Dome Tank Car

A million-dollar press was needed to make this new car possible! And yet—whether you follow the trend to leasing, or whether you buy—you get DURADOME benefits at *no extra cost*. Stronger . . . easier to clean . . . easier to apply lining. Get *all* the facts on the new DURADOME now from your Shippers' representative.

COPR. 1954 S. C. L. C.

improved 4 ways

1. ***Flued Dome*** . . . dome base actually pressed out of heavy steel plate—eliminating fillet welds and dome shelf for greater structural strength and corrosion resistance.

2. ***Pressure-type Construction*** . . . uses complete "ring-sections" or cylinders to build up the tank. That means heavier steel *all* the way around for greater durability.

3. ***All-welded Insulation Jacket*** (when required) . . . angles and bolts completely eliminated. Streamlined—more weatherproof—needs less maintenance.

4. ***Standardized Underframe*** . . . the same, all-welded underframe for tanks of all standard types and capacities. Provides flexibility of use; more economical maintenance!

The DURADOME car is available for lease or sale through . . .

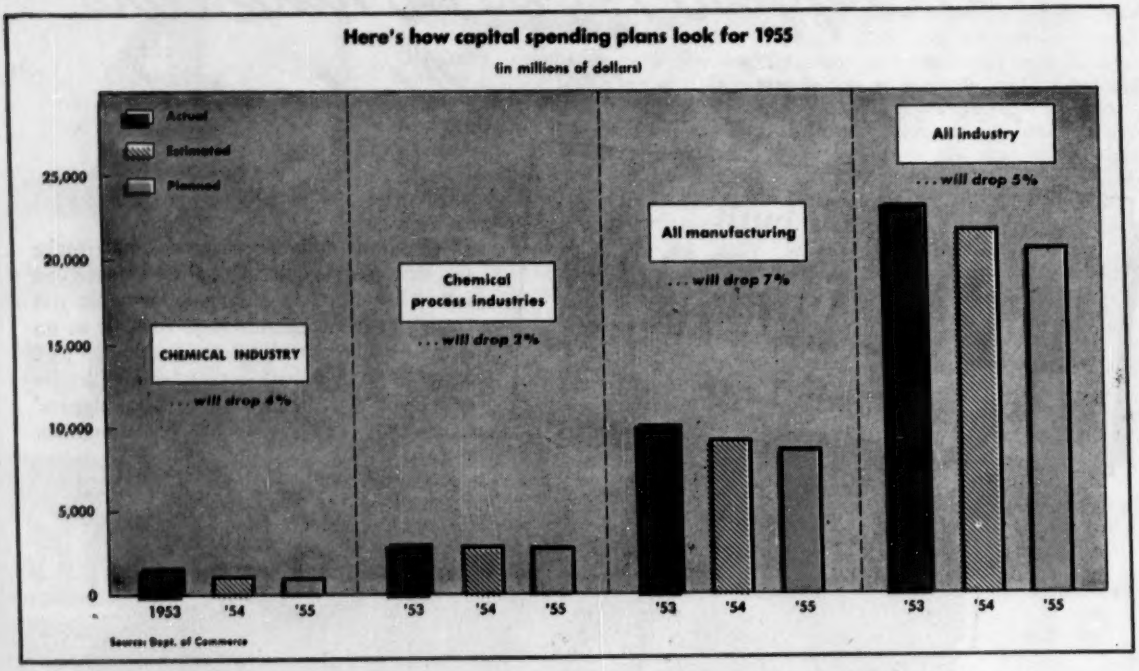
SHIPPERS SHPX CAR LINE

SHIPPERS' CAR LINE CORPORATION

30 Church Street, New York 7, N. Y.

A subsidiary of acf INDUSTRIES Incorporated

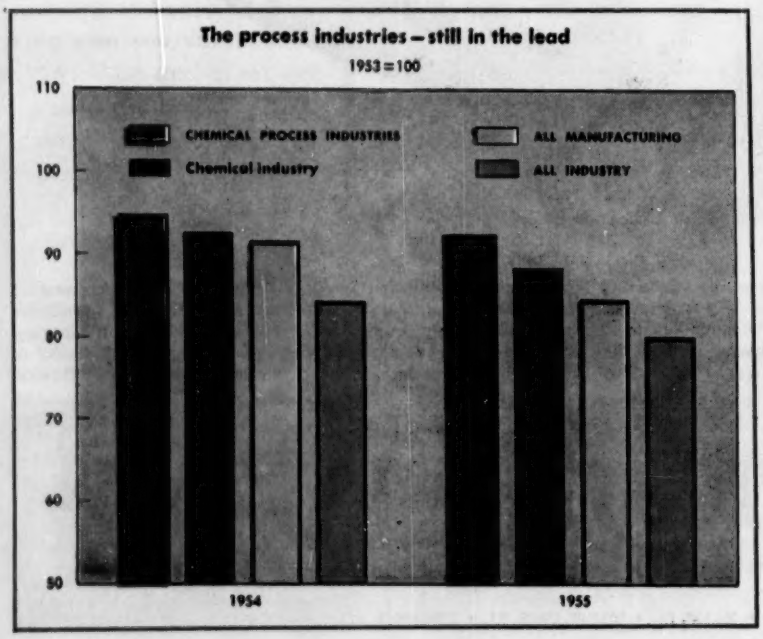
CHICAGO, ILL. • HOUSTON, TEX. • SAN FRANCISCO, CAL. • MILTON, PA. • EAST ST. LOUIS, ILL. • SMACKOVER, ARK. • TULSA, OKLA. • NORTH KANSAS CITY, MO.



Optimism: Keynote for '55

Companies in most manufacturing industries are planning somewhat lower levels of capital investment in 1955 than in 1954, but there are sure signs this fall that the trend downward is leveling off. Outlook for sales in 1955 is optimistic, and most companies (expecting an upturn in business conditions generally) are predicting that investments in new plants and equipment in 1956 will equal, if not exceed, 1955 totals.

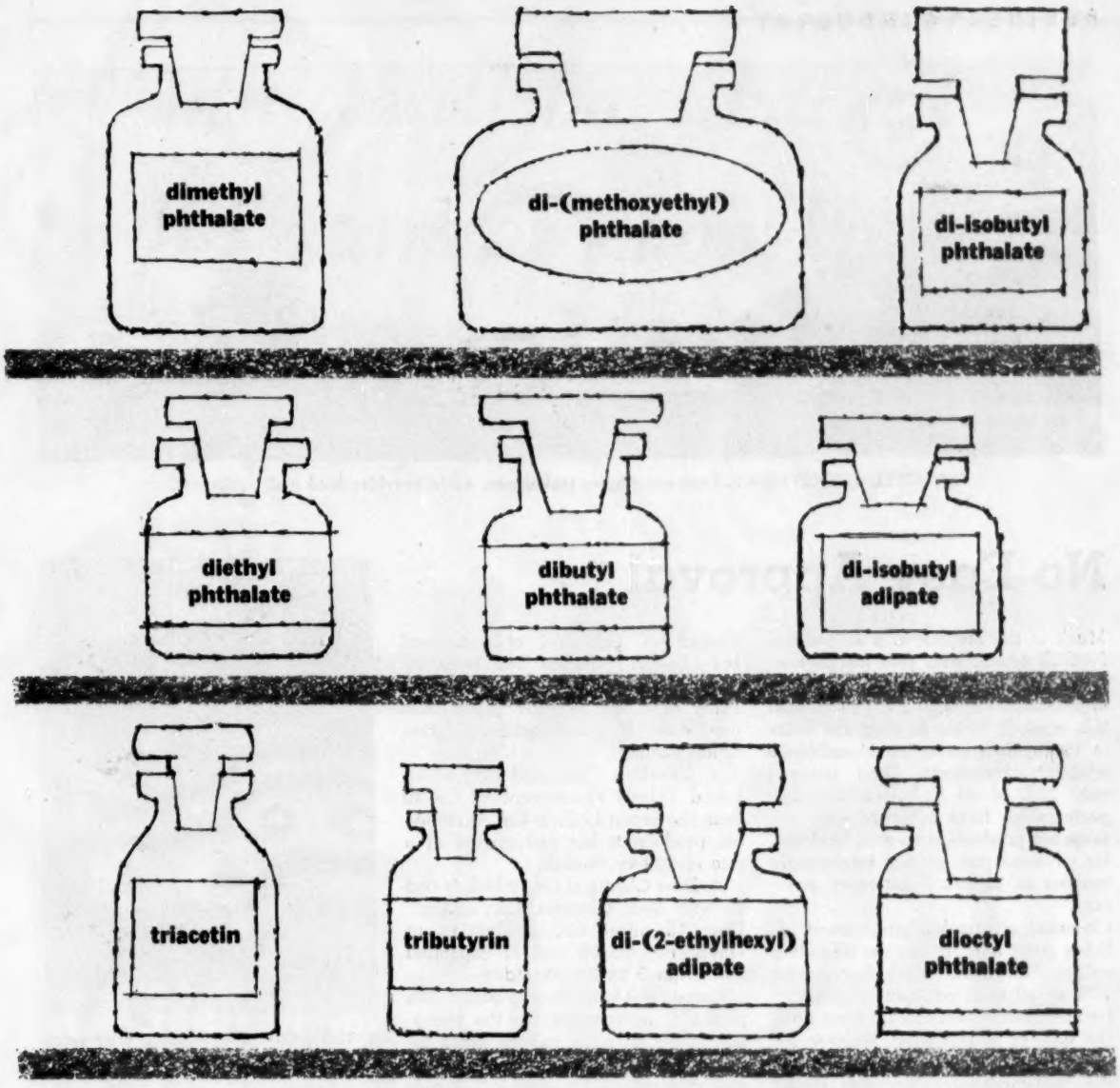
That's the nub of a survey conducted recently by the McGraw-Hill Dept. of Economics on business plans for the months ahead. Estimates reported by the survey admittedly mirror *preliminary* plans because many companies don't complete their budget reviews until later in the fiscal year. But past experience has proved that advance estimates are reliable indicators of capital spending trends—particularly in years of transition when executives are liable to underestimate, rather than overestimate capital spending.



Chemical Processing Outlook: Indicating that the post-Korea boom in the chemical industry is no longer having a major effect on capital spending plans is the fact that most companies now say they plan to reduce capital outlay by less than the average for other nondefense industries (*see graph*).

Within the wider range of plans, however, appears a vast dissimilarity in forecasts. Stone, clay and glass companies, for example, plan to increase their capital spending by 23% in 1955, whereas chemical companies are predicting a 4% drop in spending, and paper producers say spending will dip 6%; rubber producers, 9%; and petroleum refiners, 7%.

A majority of manufacturers (57%) are agreed that spending will level off in 1956, however. The reason's obvious. Over 66% of them think sales will pick up next year; in the paper and rubber industries alone, more than 90% of the companies surveyed expect an increase in sales.



Eastman

plasticizers

Call or write for your copy of our PLASTICIZERS booklet. It contains specifications, properties and typical uses for all Eastman plasticizers.

These products are stored in bulk at Kingsport, Tennessee, and Lodi, New Jersey, by Eastman Chemical Products, Inc.; by DeMert & Dougherty, Incorporated, in Chicago and St. Louis, and by Anderson-Prichard Oil Corporation in Akron and Cincinnati.

Eastman
CHEMICAL PRODUCTS, INC.
KINGSPORT, TENNESSEE
a subsidiary of EASTMAN KODAK COMPANY

SALES OFFICES: **Eastman Chemical Products, Inc.,** Kingsport, Tenn.; New York—260 Madison Ave.; Framingham, Mass.—65 Concord St.; Cincinnati—Carew Tower; Cleveland—Terminal Tower Bldg.; Chicago—360 N. Michigan Ave.; St. Louis—Continental Bldg.; Houston—412 Main St. **West Coast: Wilson Meyer Co.,** San Francisco—333 Montgomery St.; Los Angeles—4800 District Blvd.; Portland—520 S. W. Sixth Ave.; Seattle—821 Second Ave.

INVISIBLE INVESTMENT: Dow contributes techniques, Asahi provides land and equipment.

No Easy Approval

Much in the manner of a disgruntled football coach, who sees his linemen being drawn out of position by the opposition, the Japanese government this week is trying to plug the holes in its royalties-for-technical-assistance contract procedures. Dual reasons: only 25% of all technical assistance partnerships have achieved their anticipated production targets; and dollar payments are getting increasingly tougher in Japan's deflationary economy.

Chemical companies, government officials point out, are not the offending culprits, however. While fewer than 17% of all such contracts signed between Japanese and foreign firms since the end of World War II have involved chemical companies, most of the "outstandingly successful deals" have been in the chemical category—e.g., polyvinyl chloride, Aureomycin, nylon and silicone resins.

B. F. Goodrich Chemical Co., for example, has engaged in the sort of technical agreement pact that Japanese authorities would like to see emulated. With a $1.3-million investment and three Japanese partners (Japan Light Metal, Furukawa Electric Industry, and Yokahama Rubber), it started operations in 1952 with a monthly production of 250 tons of polyvinyl chloride. Today output is running close to 430 tons; Goodrich gets a royalty of 3% on sales. (The first year, royalties were 1.5% of sales, the second, 2%.)

Similar successes are being registered by:

• Monsanto Chemical Co., which runs the Monsanto Kasei Co. jointly with Japan's Mitsubishi Chemical. Output of polyvinyl chloride and butyl-benzyl-phthalate has been increased from 100 to 350 tons/month. Plans now are to start polystyrene production if government validation comes through.

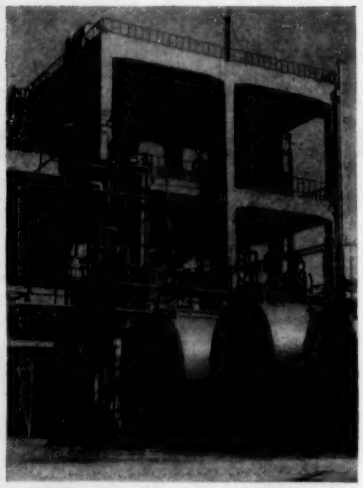
• American Cyanamid Co., which joined Takeda Pharmaceutical Co. to form the Japan Lederle Co. Aureomycin production has just started at a rate of 300 kg./month.

• Dow Chemical Co., which is tied up with Asahi Chemical Co., in Asahi Dow Chemical Co. Production of vinylidene chloride will be expanded soon from 5 to 200 tons/day.

Cause for Alarm: Such pleasant and profitable agreements are the exception rather than the rule in Japan today, government authorities claim. A vast majority of Japanese-U.S. royalties-for-assistance deals have boomeranged on the Japanese firm; they're paying far more out in royalties than they're getting in either technical know-how or funds for expansion. Dollar payments have soared (from $500,000 in 1950 to $11.5 million in 1954), but production hasn't been materially aided. "And the result is an ever-increasing drain on Japan's deteriorating foreign exchange holdings."

Moreover, complaints of "false agreements" by embittered Japanese companies are on the rise. One fertilizer producer, for example, recently bought know-how from a U.S. firm (on a royalty basis), found that what he'd paid for matched exactly what company researchers had developed independently.

Making the licensing situation even more incendiary: Japanese producers, facing stiffening competition at home are squabbling among themselves. As soon as many a negotiated contract is made public, competitors, fearful of being outpaced, are apt to urge government pressure against the company lining up foreign aid.



ASAHI DOW: For Saran, a joint setup to expand production.

There's no doubt, however, that Japan still wants technical assistance from the U.S. In the fore: petrochemicals—a government favorite; Wanted too: techniques to make synthetic fibers, synthetic resins, ion-exchange resins, synthetic phenol and olefins.

Conscious of its basic needs, there's no doubt that the Japanese government will continue to grant some royalties-for-assistance contracts. But it's mood today is one of cautious restraint. Fewer contracts will be granted in the months ahead; and those companies finally accorded permission to sign royalty agreements will be carefully screened.

the multiwall bags backed by 107 years of know-how . . .

CHASE Multiwalls

Call on your "C"-Man, your Chase representative. You can't put your problems in more capable hands. You can't put your products in better bags.

Sewn valve, sewn open mouth, pasted valve, pasted open mouth

For samples and current prices, write Department 21-K

SINCE 1847

CHASE BAG COMPANY

General Sales Office: 309 West Jackson Blvd., Chicago 6, Illinois

30 BRANCHES AND SALES OFFICES—STRATEGICALLY LOCATED

PAID TIME OFF IN CHEMICAL PLANTS

(Based on USDL survey of labor contracts)

Of chemical companies surveyed—

WEEKENDS

- 42% pay time-and-one-half for Saturday work;
- 29% pay double time for Sunday work;
- 46% pay time-and-one-half for sixth consecutive work-day;
- 60% pay double time for seventh consecutive work-day.

HOLIDAYS

- 58% grant 6
- 30% grant 7
- 9% grant 8 or more

} paid holidays.

- 43% pay double-time
- 45% pay double-time-and-one-half
- 4% pay triple-time

} for work done on holidays;

CLEAN-UP TIME

- 32% grant daily periods of paid wash-up, clean-up or clothes-changing time.

REST PERIODS

- 33% grant daily periods of paid rest time—
  - at 1 plant, 1 period of 10 minutes;
  - at 1 plant, 2 periods of 5 minutes each;
  - at 11 plants, 2 periods of 10 minutes each;
  - at 10 plants, 2 periods of 15 minutes each.

Up in the Top Quarter

Chemical companies' investment in their employees' nonproductive minutes, hours and days is bulking heavy in the industry's total labor costs.

By this week, chemical process firms have come up among the top 25% of the nation's manufacturing industries in proportion of payroll dollars put out for time not worked, and in the form of extra pay for holidays, nights and weekends.

Chemical concerns' adoption of these costly practices (*see table*) is for the most part a recent development. While the industry was keyed to batch-processing, small investment in equipment, the six-day work-week and the 10-hour day, there was no problem about shutting down the shop each evening and keeping it closed for Sundays and holidays. Particularly within the past decade, technological developments—and competition—have decreed the economic need for companies to get more output per unit and per man-hour; and management has been called on to recognize the principle that a man who works at night or on a holiday should be paid at a higher rate than for normal working hours.

Holiday pay came to be a popular way to raise employees' take-home during World War II, when wage rates were supposed to be strictly controlled. Rest periods came into vogue during World War I.

Busy Weekends: One indication of the extent to which many chemical process companies have made around-the-clock operations an established way of life for their employees shows up in figures on pay practices for work beyond 40 hours/week. Chemical firms lag behind most other manufacturing industries in percentage of plants that have provisions for premium pay on Saturdays and Sundays; but it appears that the only reason for this is that chemical companies that schedule work for weekends are generally the ones that keep the plant humming all the time, and have gotten out of the habit of thinking of a standard work-week as a Monday-to-Friday stint.

Instead, these companies now work out more complex plans to divide the straight-time work, the extra-pay shifts, and the days off among all hourly paid employees. At a single plant, a work-week might start on Monday for some employees, on Tuesday for another group, etc.; and the labor contract would call for premium pay for work on the sixth and seventh days of any work-week, whether Saturday, Sunday, or any other day. The chemical industry has a greater percentage of plants in this category than does any other manufacturing category.

Frequent Fiestas: Only three manufacturing industries are more generous than chemical companies in granting paid holidays.

But labor unions are pressing for still greater benefits in two directions: more paid holidays per year, higher premiums for holiday work.

Industrial relations men are not agreed as to the desirability of all these bonus pay provisions, or on their effect on employee morale. But it's certain that no company likes to see these extra labor costs pile up without any comparable gain in production.

From this standpoint, it is to be expected that the harder labor pushes for increased benefits in this field, the more management will feel compelled to install more labor-saving equipment—that won't demand extra pay for holidays and night shifts.

A C9 aromatic solvent for use when you need a higher flash point and slower evaporation than Shell Xylene

SHELL OIL COMPANY

50 WEST 50TH STREET, NEW YORK 20, NEW YORK
100 BUSH STREET, SAN FRANCISCO 6, CALIFORNIA

sweet'en-er

That which sweetens or imparts a sugarlike flavor.

Example: **GLYCERINE!**

In products like cough drops, toothpastes, candies, capsules, and medicines, where Glycerine's major properties make it an important ingredient, Glycerine's pleasant taste is an extra "plus." Glycerine not only acts as a humectant, demulcent, solvent, plasticizer or preservative in formulations of this type, but also enhances their flavor.

U.S.P. Glycerine is nontoxic and easily digested. Its applications in food processing have been accepted by the American Medical Association Council on Foods, and permitted by Federal and State food and drug authorities.

If you're developing a product that must have any of the properties mentioned—and be palatable too—check Glycerine.

New Pectin Jelly

For example, a concentrated pectin jelly composition was recently patented. When dissolved in hot water and then cooled, this solid aqueous gel forms a larger volume of edible jelly dessert. Glycerine acts as a sweetener.

Balance of Properties

Glycerine's sweetening action is only one part of the story. You can count on *versatile* Glycerine to serve as—

preservative	bodying agent
bacteriostatic	stabilizer
lubricant	antifreeze
penetrant	blending agent

Booklets on the application of Glycerine in the drug and cosmetic and food fields are available. For your copy, write Glycerine Producers' Association, Dept. CW, 295 Madison Avenue, New York 17, N. Y.

Nothing takes the place of Glycerine

NOW OPERATING: Samduk Paper's Anyang, Korea, plant, at prewar output rate.

FOREIGN. . . . . .

Paper/Korea: With UNKRA assistance, the Samduk Paper Manufacturing Co.'s plant at Anyang, Korea, is back in operation. Damaged equipment has been reconditioned, new equipment installed, and production is running at the prewar rate of 100 tons/month.

•

Paint/Venezuela: Sherwin-Williams Venezolana C.A., Valencia, has just brought its new paint plant 100 miles east of Caracas onstream. Capital (all Venezuelan): 4 million Bolivars ($1.2 million). The company, which has just signed a licensing agreement with Sherwin-Williams Co., Cleveland, reportedly will have a capacity of 900,000 gal./year.

•

Sulfuric Acid/Australia: Sulphide Corp. Proprietary Ltd.'s £1-million sulfuric acid superphosphate plant at Cockle Creek, New South Wales, will be in full production by early December, according to Simon-Carves (Australia)—the construction firm that is building it. Output of sulfuric acid: 100 tons/day; output of superphosphates: close to 2000 tons/week.

•

Fertilizer/India: Four more fertilizer plants by 1960 at an estimated cost of $160 million is the target of a new scheme approved by the Indian government. Nitrogen requirements in India, it is estimated, will increase to 150,000 tons in 1956-57, to 190,000 the following year, and to 370,000 tons by 1961. Present nitrogen production: 110,000 tons.

•

India-China Trade: A trade agreement has been signed by India and China—the first of its kind between the two countries. It provides for trade to be conducted in accordance with present export-import control regulations, and is valid for an initial period of two years. Two schedules of commodities to be exported and imported are appended to the agreement. Significantly, both schedules include chemicals and allied products.

•

Citric Acid/Canada: Merck & Co., Ltd., Canada, and John & E. Sturges, Ltd., Birmingham, Great Britain, have formed a joint company to produce citric acid in Canada. Construction of a plant at Vaheyfield, Que., has started; completion is scheduled for early in 1955. Output will be distributed mainly through the present Canadian agencies of the two parent companies—both of which have been large importers of citric acid.

•

Pharmaceuticals/Argentina: Chas. Pfizer & Co. (Brooklyn) has submitted a proposition to Argentine authorities, complete with design specifications, for construction of a 100-million-peso plant to produce antibiotics near Buenos Aires. Largest plant of its kind in Argentina, the proposed unit would require over $2 million in equipment, would employ 200 people. Estimated date of completion: mid-1957.

Lederle Laboratories (Pearl River, N.Y.) has received approval from Argentine authorities, meanwhile, to build a plant in Buenos Aires to produce Aureomycin, sulfa drugs, and folic acid. It's expected that it will be in operation within a year and that it will produce sufficient quantities of these drugs for export.

Spencer Service is Wonderful

"He'll stay up all night to find new ways to please Spencer customers."

POLYETHYLENE PROGRESS REPORT:

Here is another in the new series of full-color advertisements featuring Poly-Eth, the symbol of Spencer Polyethylene. Appearing in TIME Magazine, these ads are designed to build a larger market for polyethylene. In 1955 Spencer will begin production of this unique plastic.

SPENCER

America's Growing Name In Chemicals

SPENCER PRODUCTS: "Mr. N" Ammonium Nitrate Fertilizer • SPENSOL (Spencer Nitrogen Solutions) • Ammonia (Commercial and Refrigeration Grade) Aqua Ammonia • 83% Ammonium Nitrate Solution • Synthetic Methanol Formaldehyde • Hexamine • Polyethylene (1955) • FREZALL (Spencer Dry Ice) • Cylinder Ammonia

SPENCER CHEMICAL COMPANY

General Offices, Dwight Bldg., Kansas City, Mo. Works: Chicago, Ill., Pittsburg, Kan., Henderson, Ky., Vicksburg, Miss., and Orange, Texas (under construction.)

STEPAN

FATTY ALCOHOLS *for* ETHOXYLATING

$CH_3(CH_2)_7CH=CH(CH_2)_8OH$

If you do ethoxylating with ethylene and propylene oxides, you will be interested in the new Stepan fatty alcohols, Makanol I and Makanol II. Ethoxylated, these Makanols offer outstanding advantages as emulsifiers and for use as non-ionic detergents. They also serve as emulsion breakers for certain petroleum base products.

In addition to ethoxylating, these products can be sulfated, halogenated, dehydrated, or esterified. Present Stepan fatty alcohols are from tallow, soya, fish, and linseed oils.

Specialized fatty alcohols tailor-made to meet your particular requirements, are available in tank car lots.

GENERAL SPECIFICATIONS

	% Myristyl Alcohol	% Cetyl Alcohol	% Stearyl Alcohol	% Oleyl Alcohol	% Linoleyl Alcohol	Iodine No.	Saponification Value	Titer
MAKANOL I	6	27	15	50	2	55	2	42
MAKANOL II	6	27	67	..	..	4	2	52

Write today

We will be pleased to furnish you with samples and additional information on Makanol I, II ... or quote to your specifications.

STEPAN CHEMICAL CO.
20 N. Wacker Drive
Chicago 6, Illinois
Telephone: Central 6-5511

B & I . . . . . .

WIDE WORLD

JUDGE HARTER: In synthetic rubber plant, supersafety devices can wait.

LABOR . . . . . .

Chemical Plant Safety: After three years of controversy, Goodyear appears to have won its point in a dispute with a labor group and the Ohio State Industrial Relations Dept. In Common Pleas Court at Columbus, Judge Joseph Harter has decided that the U.S.-owned, Goodyear-operated synthetic rubber plant at Akron is a safe plant in which to work. His ruling—if not upset on an appeal—will have the effect of calling off state safety inspectors.

The affair started in 1951 with a labor dispute over procedures of storing and handling certain gases from the plant's chemical feedstocks. The state moved in, ordered a series of plant changes that Goodyear estimated would cost $1 million. Federal safety inspectors, on the other hand, found that all possible precautions for handling highly flammable chemicals had been built into the factory; and the court now has endorsed that finding.

•

Endurance Contest: Another recent court decision setting a policy for labor-management problems has come from Judge Marvin Dye of the New York State Court of Appeals. The ruling: an employer cannot interfere with union representatives who peacefully picket his place of business in an attempt to persuade employees to join the union, no matter how long the picketing continues. This decision—hailed by an AFL spokesman as "a milestone in labor history in New York"—was issued in a case arising from a two-year picketing campaign

WHY DEBT-FREE INDIANA

is attracting MORE INDUSTRIES per capita than any other state!

NO STATE DEBT. Constitution forbids it! *Surplus: $80 million!*

NO "NUISANCE" OR "PENALTY" TAX. *No net income, use, retail sales, corporate or manufacturer's tax!* Only ¼ of 1% on gross receipts from sales for processing, re-sale, etc., not in interstate or foreign commerce; 1% on other receipts derived in Indiana except from sale to ultimate consumer (½ of 1%); *there is NO tax on receipts from sales in interstate or foreign commerce!*

3RD LOWEST UNEMPLOYMENT TAX IN U. S. Averages .7 of 1%—*only half U. S. average!*

RAW MATERIALS. Low-cost coal (6th in U.S., 100 mines, 20-30 million tons yr., 2000 yrs. at present rate). Limestone (bldg. & agric.). Natural gas (billion cu. ft. yr.). "Clay Center of the World." Petroleum (*and* 1000-mi. pipeline from s.w.). "White Clay," rich in aluminum. Water. Corn. Soybeans. Sand. Gravel. Wood. Etc.

CLOSEST TO ALL MARKETS, to *exact* U. S. population center.

PLENTY OF FIRM POWER. Never lost a plant or prospect for want of power. Over 3 million h.p. a yr. (10% over U. S. per cap. avg.) *plus* 1½ million emergency h.p. through interconnected transmission system. Often ½ of 1% of total prodn. cost. Always kept ahead of needs. Only 2% hydro- or oil-generated—98% by coal, mostly *Indiana's own* coal.

GOOD LABOR—97% native, 99.2 literate. Responsible, versatile, *30% fewer government workers per capita than nationally!* Enviable strike and lockout records. First in U. S. with state labor-management charter.

LOWER LABOR COSTS. U. S. median weekly wage of mfg. employees under unemployment compensation is 7% higher than in Ind. And Mich.-Ill.-Ohio avg. is 8% higher than in Ind. Families earning $2000-$6000 are 10% *more* prevalent in Ind. than nationally; under $2000 and over $6000, 16% and 10% *less* prevalent. Families earning over $6000 are 28% *less* prevalent in Ind. than in Mich.-Ill.-Ohio.

EXCELLENT TRANSPORTATION—23 railroads (3% of total U. S. rail miles in 1.2% of U. S. area—142% more than our sq.-mi. "quota"); 9 airlines; 200 airports; 300 motor freight lines; shipping to Miss. River by Ohio River and Chicago Canal; Lake Mich., etc. *Literally* "The Crossroads of the Nation!"

258 TOWNS AND CITIES OVER 1000—*5* over 100,000 . . . *14* 25,000-100,000 . . . *22* 10,000-25,000 . . . *217* 1,000-10,000.

LOWER-COST GOVERNMENT, state and local, than in neighbor states.

NATION'S FINEST HIGHWAYS. More miles, more permanent pavement, than any other state per driver and per sq. mi. (twice as many as neighbor states)—*and all paid for!*

SUPERB SCHOOLS (first state in U.S. to provide constitutionally for public education); fine teacher salary, tenure, retirement policies; 29 colleges, universities.

IT'S GOOD TO LIVE IN INDIANA! Nationally known symphony orchestras, art galleries, artists, writers, 250 public libraries. Fine housing. Moderate rent. Good climate (summer avg. 76°, winter 31°, mean 53°). Good hunting, fishing, conservation. Over 1000 lakes, streams; 32 famous state parks, forests, beaches. Resorts. Winter sports. Fine public swimming pools, parks, playgrounds, golf courses.

INDIANA now has 10,500 industries (*up 31% from '48 to '53, up 29% from '39 to '47*) • Leads neighbor states in *new*-plant value per cap.—by 127%, 110%, 38%, 12%, 8%. • Is growing 59% faster than U.S. (now 4,300,000—60% urban, 40% rural). • Adds 3 times more dollar value to goods by mfg. than in '39 (states ranking 1st and 2nd in *total* value added by mfg. are outranked *per cap.* by Ind. by 38% and 26%!). • Outranks 46 states in % of employees in durable goods mfg.—81% over U. S. avg. • Tops U. S. ratios by 193% in % of population engaged in motor vehicle equipment manufacture; by 152% in primary metal industries; by 87% in non-electrical machinery; by 34% in fabricated metal industries; by 29% in electrical machinery and equipment. • Has world's largest steel plant, oil refinery & cement plant. • Ranks 1st in U. S. in refrigerators, 'phones, gasoline pumps, mobile homes, musical instruments, bldg. limestone (¾ of U. S. total) . . . 3rd in steel, motor vehicles & parts . . . 5th in rubber . . . strong in chemical processing, rail cars & equipment, machine shop & foundry, drugs, clothing, glass, fibreglass, wood veneers, furniture, meat packing, canning, farm machinery, electronics, plastics, jet engines, etc.—*enough DIVERSITY to meet MOST component needs HERE!*

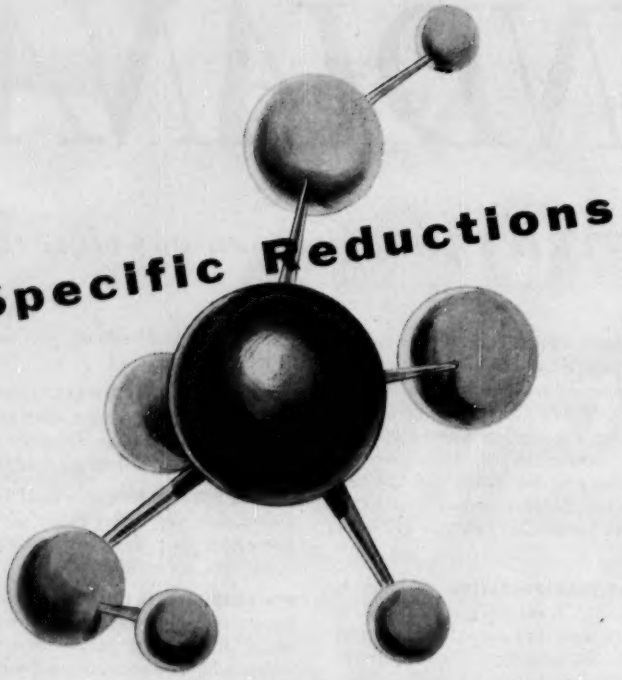
WRITE FOR NEW BROCHURE

Further specific details will be brought to you in person, if you wish, or mailed (in plain envelope if stipulated). Write or 'phone . . .

INDIANA DEPARTMENT OF COMMERCE • 333-CW, STATE HOUSE • INDIANAPOLIS, INDIANA • PHONE MELROSE 5-3571

THESE ARE ONLY 2% of the Industries Now Enjoying Debt-Free Indiana

Admiral . Allis-Chalmers (2) . Alcoa (2) . American Can (4) . American-Standard . Anaconda (2) . Armour (2) . Armstrong Cork . Arvin (5) . Auto-Lite . Avco (3) . Bendix (2) Best Foods (2) . Bobbs-Merrill . Borden (3) . Borg-Warner (2) . Bridgeport Brass . Brown Shoe . Budd . Campbell Soup . Capehart-Farnsworth . Celotex . Chrysler (5) . Colgate-Palmolive-Peet . Columbia Records . Container Corp. of America (3) . Continental Can . Crane (2) . Cudahy . Decca . Diamond Chain . R. R. Donnelley & Sons . Drewry's . DuPont (2) . Fairbanks Morse . Firestone . Fruehauf . General Electric (5) . General Foods . General Motors (7) . General Time . General Tire & Rubber (3) . Glidden (2) . B. F. Goodrich . Goodyear . H. J. Heinz . I. B. M. . Inland Steel . International Harvester (4) . International Steel . Johns-Manville (2) . Kraft Foods (7) . Lever Brothers (2) . Libby, McNeill & Libby (2) . Eli Lilly (4) . Magic Chef . Magnavox . Magnesium Co. of America . Mallory (2) . Marmon-Herrington . McQuay-Norris (2) . Mead Johnson . Miles Laboratories . Minneapolis Honeywell . National Gypsum . National Homes . Nestlé . Overhead Door . Owens-Illinois (3) . Perfect Circle (4) . Phelps-Dodge . Philco . Phillips Petroleum . Pittsburgh Plate Glass (3) . Pullman-Standard (3) . Quaker Oats . R. C. A. (4) . Ralston Purina (2) . Rand McNally . Raybestos-Manhattan . Reel Silk (2) . Reliance (4) . Reo . Reynolds Metals . Schenley . Seagram . Sealed Power . Servel . Seven-Up . Sinclair . Singer . Socony Vacuum . Standard Brands (2) . Standard Oil . Stewart Warner (2) . Stokely-Van Camp (5) . Studebaker . Swift & Co. (3) . Toledo Scale . Union Starch (2) . U. S. Envelope . U. S. Gypsum (2) . U. S. Rubber (4) . U. S. Shoe (2) . U. S. Steel (6) . Universal Atlas . Western Electric . Westinghouse . Whirlpool . Willys . Wilson Brothers . Youngstown . . . and ANOTHER 10,000, ALSO enjoying Debt-Free Indiana.



for functional groups

Lithium Aluminum Hydride

speeds, simplifies, increases yields

Under atmospheric pressures — at room temperatures, LAH reduces functional groups swiftly and easily without danger of undesirable side reactions. In ether solutions or slurries, LAH assures high, profitable reductions. For example:

Lithium Aluminum Hydride reduces . . .

To Alcohols Aldehydes, Acid Chlorides, Esters, Carboxylic Acids, Ketones, Expoxides.

To Amines Amides, Nitriles, Anils, Nitro (aliphatic).

To Azo Compounds Azoxy, Nitroso, Nitro (aryl).

To Thioethers Sulfoxides.

To Thiols Sulfonyl Chlorides, Disulfides.

A call or letter will bring complete information without obligation. Do it now!

Pioneers In Hydrogen Compounds

MH **Metal Hydrides** INCORPORATED

22 Congress St., Beverly, Mass.

B & I . . . . . .

in Manhattan. The court held that the picketing was simply one form of legitimate organizing activity.

•

Strike Postponed: Expiration of the 80-day injunction against a strike at the Oak Ridge and Paducah atomic energy plants operated for the government by Union Carbide's Carbide and Carbon Chemicals Co. so far hasn't touched off the walkout threatened by some 4500 members of United Gas, Coke, & Chemical Workers (CIO). Instead, Gas-Coke President Elwood Swisher told production workers to stay on their jobs "until I'm convinced that negotiations now under way have failed." As of last week, the union had cut its wage demand to a 10¢/hour increase, and the company was still offering the 6¢ increase recommended by a fact-finding board.

Three AFL unions, however, went on strike at two installations in the country's atomic energy program. More than 1300 electricians and pipe fitters set up picket lines that crippled construction work at Paducah; and about 225 electricians staged a one-day strike at a Covington, Ky., plant that makes electrical-control equipment for three big atomic plants. At issue: layoff procedure at Paducah, wages at Covington.

LEGAL . . . . . .

Chemical Contraband: Pharmacists of Broome County, New York, have voluntarily put a ban on sale to young people of chemicals that can be used to make explosives. President P. J. Colella of the county pharmaceutical association says the action was taken to prevent recurrence of incidents like the one in which a 15-year-old boy was injured by explosion of a bomb he had made. Among products not to be sold to minors: chlorates, perchlorates, nitrates, sulfur, phosphorus, strong acids and very toxic substances like cyanides and arsenic compounds.

•

Insulin Substitute: Also in New York's Broome County, a company that stopped production last spring when the state pharmacy board criticized its tonic described as a substitute for insulin is seeking the U.S. Food & Drug Administration's approval of that product before resuming production. Vitacare, Inc., voluntarily closed its plant when pharmacy board inspectors criticized the company's practice of manufacturing "Diabeten" capsules without the supervision of a licensed pharmacist.

Dependable Source for Chemical Raw Materials

N. L. Esthus, purchasing manager for the Morton Salt Company, thinks highly of Wyandotte's product uniformity and prompt service.

How Wyandotte chemicals help make Morton Salt

The Morton Salt Company, Chicago, Ill., has been in business since 1848. One of the world's largest producers of agricultural, industrial and household salt, Morton is unique in that it obtains salt from every known major U.S. source: wells, mines, the Great Salt Lake in Utah, and the Pacific Ocean.

But before this raw salt is ready for distribution under the Morton name, it must be refined, granulated, dried, graded, and processed to prevent clogging. And that's where Wyandotte chemicals enter the picture.

Wyandotte Caustic Soda is used in Morton's settling tanks, along with Soda Ash, to remove impurities. Wyandotte Calcium Chloride keeps agricultural salt soft and moist, and is used in canning salt to firm up vegetables.

"Wyandotte has been one of our most important suppliers for many years," says N. L. Esthus, purchasing manager. "Wyandotte products are always uniform, and service is prompt. Another thing, we like the way technical service is immediately available to all our plants."

For more than 64 years, Wyandotte has taken pride in its products and services to industry. Your inquiries on the applications of any of our wide range of organic and inorganic chemicals are most welcome. Write us for data and technical assistance, giving as much information as possible. *Wyandotte Chemicals Corporation, Wyandotte, Michigan. Offices in principal cities.*

Wyandotte
CHEMICALS

HEADQUARTERS FOR ALKALIES

Soda Ash • Caustic Soda • Bicarbonate of Soda • Chlorine
Calcium Carbonate • Calcium Chloride • Glycols • Synthetic Detergents • Agricultural Insecticides • Soil Conditioners
Other Organic and Inorganic Chemicals

Whatever the product
Whatever the process
Alamask
can solve your odor problem!

If you meet buyer resistance due to offensive odor of your finished product, an Alamask reodorant can be specifically designed to improve its odor or lessen its malodor.

If your employees complain because raw materials used in your processing operations create an obnoxious smell, an Alamask reodorant can vastly improve working conditions by masking objectionable fumes.

If your plant community complains of offensive effluents from your plant stacks, an Alamask reodorant can be superimposed upon the malodors, making for a clean, fresh atmosphere.

The technicians of our engineering service section will work with you toward eradicating your odor problem successfully and inexpensively.

For complete details on the application of these chemical products in a vast range of industries, write today to Industrial Reodorants Division (Alamask), Rhodia, Inc., 230 Park Avenue, New York 17, N. Y.

Rhodia INC.

WIDE WORLD

COMMISSIONER YOUNG: On numerous uranium stocks, he slams the door.

Uranium Stocks: Only one of the many new uranium mining and refining companies is legally qualified to sell its stock in Illinois. Securities Commissioner Samuel Young says that Four Corners Uranium Corp. stock has been registered and approved for distribution; but that sale of securities of 25 other uranium companies has been prohibited in the state. Among the group are five Canadian firms.

•

Charges Admitted: In Vancouver, B.C., eight papermaking companies have pleaded guilty to charges that they entered into a combination to lessen competition. Two other companies indicted on the same charge—Bartram Paper Products Ltd. and Crown Zellerbach (Canada), Ltd.—have declined to plead, say they'll fight to have the indictment quashed.

•

Pollution Penalties: North and south, two large oil companies were in trouble last week for air and stream pollution incidents:

• At Philadelphia, Gulf Oil Corp. said it would assume financial responsibility for damage caused by a fallout of black, oily soot that was blamed on a mechanical breakdown at the company's South Philadelphia plant. The city's air pollution control board predicted the case would be dismissed because of the company's contention that the contamination was due to a rare accident.

• In Mississippi, a $300 fine was levied against Gulf Refining Co. for alleged pollution of streams in Jones County.

Chlorine...

for the Petrochemical Industry

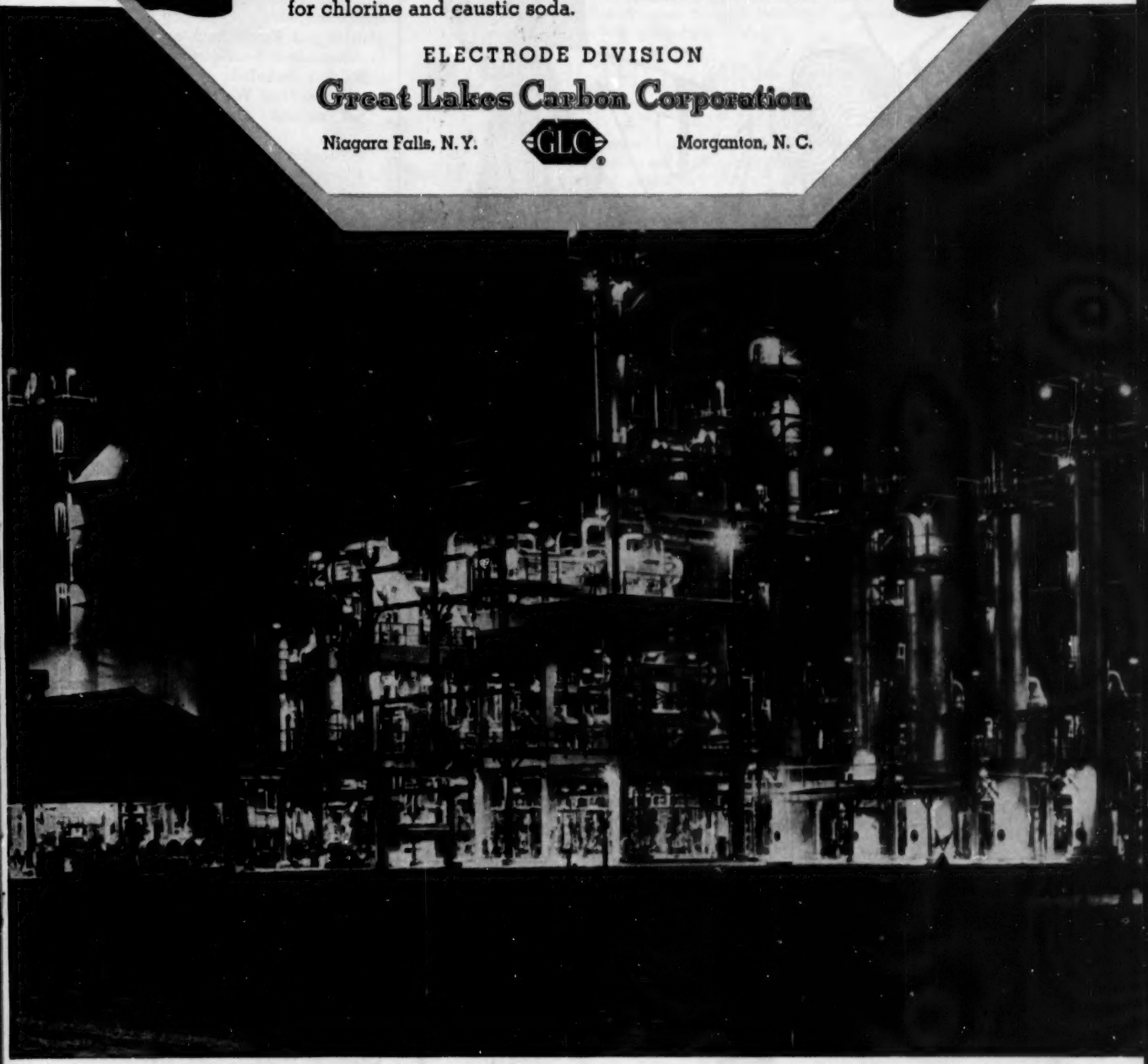
Chlorine is of swiftly growing importance in the production of many new and revolutionary petrochemicals.

Swiftly growing, too, is the use of uniformly high quality GLC GRAPHITE ANODES—in helping the electrolytic industry meet the increasing civilian and defense needs for chlorine and caustic soda.

ELECTRODE DIVISION

Great Lakes Carbon Corporation

Niagara Falls, N.Y. GLC Morganton, N. C.



Courtesy Jefferson Chemical Company Inc.

Graphite Electrodes, Anodes, Molds and Specialties

Sales office: Niagara Falls, N.Y. **Other offices:** New York, N.Y., Oak Park, Ill., Pittsburgh, Pa.

Sales Agents: J. B. Hayes, Birmingham, Ala.; George O'Hara, Long Beach, Cal.; Great Northern Carbon & Chemical Co., Ltd., Montreal, Canada

Overseas Carbon & Coke Company, Inc., Geneva, Switzerland; Great Eastern Carbon & Chemical Co., Inc., Chiyoda-Yu, Tokyo

Process "Plants"
need to be developed with care too!

WRITE TO THE PROCESS PLANTS DIVISION FOR COMPLETE INFORMATION.

INDUSTRIAL PROCESS ENGINEERS

4 LISTER AVE., NEWARK 5, N. J.

IPE

ENGINEERS, DESIGNERS, MANUFACTURERS OF PROCESSING PLANTS AND EQUIPMENT

SPECIALIZING IN PLANTS FOR: Fats and Oils . . . Fatty Alcohols . . . Resins . . . Soaps and Detergents . . . Fermentation Products . . . Pharmaceuticals . . . Medium Organic Chemicals . . . Esters . . . and many others.

Spirited Bidding

Pointing up the keen character of international competition, the Egyptian National Production Council last week revealed that it has received nine bids for construction of a fertilizer plant at Aswan.

Estimated to cost between $60-70 million, the plant will depend on electricity generated by the Aswan Dam after current hydroelectric projects are completed. (It's a major cog in NPC's plan to put Egypt back on the road to economic self-sufficiency.)

Bidders included:

- Kobe Steel Works, Ltd.
- Chemical Construction Corp. (U.S.A.).
- Montecatini (Italy).
- Norsk Hydro-Electrisk and Imperial Chemical Industries.
- Ammonia Cassale, and Societe Belge de l'Azote.
- Union Chemique de Belge.
- Friedrich Uhde K.G. and BASF.

Participating with Chemical Construction Corp. in its bid was the Egyptian industrialist, Ahmed Abbud, who owns a fertilizer plant at Suez. If Chemico's bid is accepted, says Abbud, a major part of the necessary equipment will be manufactured in Egypt.

KEY CHANGES. . .

John E. Goodman, to finance committee, Hercules Powder Co., Wilmington, Del.

Benjamin F. Lynip, Jr., to director, market research, Merchandising Div., Monsanto Chemical Co., St. Louis.

Robert L. Frank, to vice-president, Ringwood Chemical Corp., Chicago.

Lowell E. Netherton, to supervisor, inorganic research, Victor Chemical Works, Chicago.

Harrison O. Ash, to president, Aluminum Industries Inc., Cincinnati.

Wayne E. Kuhn, to general manager, Research and Technical Dept., **W. J. Coppoc,** to manager of research, and **R. W. Hall,** to manager of technical services, The Texas Co., New York City.

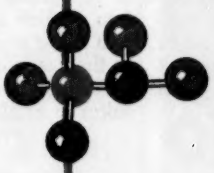
L. B. Parsons, and **David J. Bunnell,** to vice-presidents, Lever Brothers Co., New York City.

George S. Wheaton, to vice-president, Eston Chemicals Div., **Thomas F. Edson,** to vice-president, Special Engineering Projects, and **Richard J. Hefler,** to assistant to the president, American Potash & Chemical Corp., Los Angeles.

LOW-COST INTERMEDIATES IN TANK-CAR QUANTITIES

This versatile trio represents the most economical source of the amine group because of their low equivalent weights and moderate prices. Marketed by CSC in both anhydrous and aqueous forms, they are available for shipment in large-volume quantities (tank cars) as well as in drums and smaller containers. Write for latest Technical Data Sheet. Industrial Chemicals Sales Dept., Commercial Solvents Corporation, 260 Madison Avenue, New York 16, N. Y.

MONOMETHYLAMINE CH_3NH_2



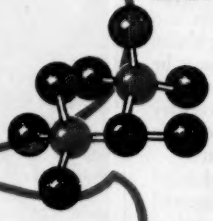
Uses

Manufacture of amide and sulfonated amide-type detergents and surfactants. Synthesis of caffeine, aminophylline and desoxyephedrine. Manufacture of photographic chemicals, the explosive tetryl, amide-type plasticizers, ion-exchange resins, corrosion inhibitors and paint removers.

Properties

Molecular Weight	31.06	
Boiling Point at 760mm, °C	– 6.79	
Flash Point, Tag Open Cup, °F	34	(30% sol)
Density at 20°C	0.912	(30% sol)
Weight per U.S. Gallon at 68°F, lbs.	7.6	(30% sol)

DIMETHYLAMINE $(CH_3)_2NH$



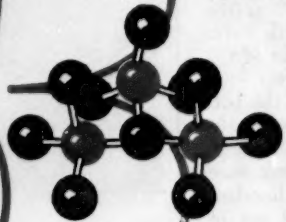
Uses

Raw material in manufacture of thiuram sulfide-type vulcanization accelerators and of dimethyldithiocarbamic acid salts used as fungicides. Neutralizing and solubilizing agent in preparation of concentrated solutions of 2,4-D salts. Manufacture of anti-malarials.

Properties

Molecular Weight	45.08	
Boiling Point at 760mm, °C	6.88	
Flash Point, Tag Open Cup, °F	54	(25% sol)
Density at 20°C	0.921	(25% sol)
Weight per U.S. Gallon at 68°F, lbs.	7.7	(25% sol)

TRIMETHYLAMINE $(CH_3)_3N$



Uses

Preparation of long-chain quaternary ammonium compounds used as softeners, lubricants and waterproofing agents for textiles. Used with benzoyl peroxide to "set" methacrylate resins. Synthesis of cationic surface-active agents.

Properties

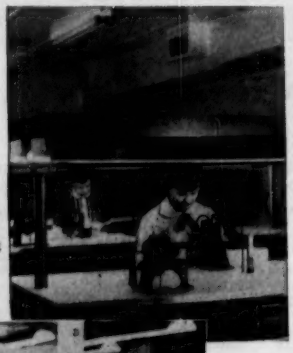
Molecular Weight	59.11	
Boiling Point at 760mm, °C	2.87	
Flash Point, Tag Open Cup, °F	38	(25% sol)
Density at 20°C	0.913	(25% sol)
Weight per U.S. Gallon at 68°F, lbs.	7.6	(25% sol)

COMMERCIAL SOLVENTS CORPORATION

INDUSTRIAL CHEMICALS

You Can Have
DRY AIR
with EXACT moisture control at any time of the year

. . . for your Comfort
. . . for your Process
. . . for the protection or testing of your machines or your materials



Assembling Electronic Parts

Packaging Food Products

This NIAGARA METHOD gives you the *most effective* air conditioning because its cooling and heating functions are completely separated from the addition or removal of moisture. Therefore, you always get a precise result. You can reach and hold any condition, or vary it as you wish, without having to rely on moisture-sensitive instruments.

It is *easy to take care of.* All parts of the equipment are accessible. The control circuits are simple. It removes moisture by absorption, yet there are no salts or solids or solutions of solids to be handled.

It is *inexpensive to operate.* It does a large amount of work in a small space. At normal operating temperatures, since it absorbs moisture directly without refrigerating below the required dew point, there is no re-heating.

Write for full information; ask for Bulletin 112. Address Dept. CW

NIAGARA BLOWER COMPANY
405 Lexington Ave., New York 17, N.Y.
District Engineers in Principal Cities of U. S. and Canada

PRODUCTION . . . . . .

Brimstone Bypass

Last year, Imperial Chemical Industries, Ltd., pressed by a sulfur dearth, decided to produce sulfur and sulfur dioxide from anhydrite mined at its rich Bellingham, England, deposits (CW, Nov. 28, '53). A likely approach, suggested by patents recently assigned to ICI, is the decomposition of anhydrite in a continuous vertical retort or muffled tunnel kiln.

Basically, the reaction is a reduction of the anhydrous calcium sulfate to calcium oxide and sulfur dioxide by heating with a carbonaceous material in the absence of air. The vertical retorts used are similar to those employed in the production of coal gas.

The preferred preparation of ingredients requires that they be pulverized and blended in order to obtain intimate contact. Coke breeze is the carbonaceous material used, while common silica-alumina clay is added to provide acidic oxides that favor the desired reaction.

The powdered mixture is bonded into granules before charging to the retort. Easier to handle in this form, granules minimize dust formation and keep product gas relatively clean. Chalk or powdered limestone may be added toward the end of the granulating operation to provide refractory coating, prevent sintering of the charge at the decomposition temperature.

Route Choice: Material is fed in at the top of the retort, flows downward through refractory tubes. The charging rate and heat input must be sufficient to raise the temperature of the mass, by stages, to 1120 C during a period of 2½ hours.

Product gas, collected from the top of the retort, contains about 85% of the sulfur charged as anhydrite: 71% comes off as sulfur dioxide, 14% as free sulfur. The latter, together with water from the clay, is condensed out of the gas by passing it through water.

As the solid residue leaves the bottom of the retort, it is cooled by a stream of gas passing upward through it. Steam is the best cooling agent since it is readily produced from abundant waste heat, easily condensed out of the product gas.

The muffled tunnel kiln method is essentially the same as the vertical retort, except for the means of conveying the material. In this process, the ingredients are carried as granules in suitable containers, or as molded briquettes, on kiln trucks.

The sulfur-depleted residue may be suitable for various subsequent uses, depending on the composition of the feed. For example, if little clay is present, the solids can be used as agricultural lime; or, they may be burned with lime and other ingredients to form cement clinker.

The chief advantage of these processes is the high concentration of sulfur dioxide (45% by volume) in the product gas. This minimizes the volume of gas that must be handled and the size of equipment required to convert it into sulfuric acid. Too, some of the free sulfur may be burned and added to the gas to adjust the concentration.

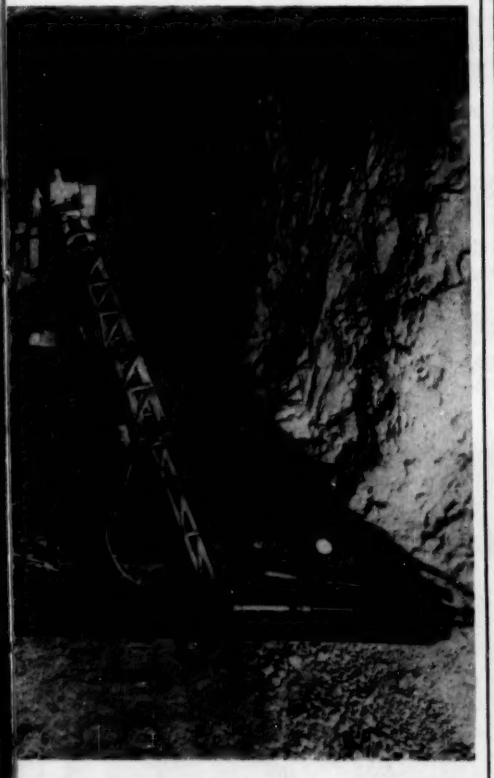
Fertilizer Goal: With a scarcity of sulfur in England, an efficient process

Push-Button

ROLLING through ICI's anhydrite mines (*see accompanying story*), a 19-ton machine takes over the job of drilling the rock for blasting. Representing more than four years of design and trial, the revolutionary carriage

of making sulfuric acid from anhydrite has obvious advantages. For example, ammonium sulfate fertilizer is currently produced in England by reacting ground anhydrite and ammonium carbonate; one of ICI's objectives could well be the use of sulfuric acid to hook the sulfate radical to the ammonium group as is generally done in the U.S. Moreover, free sulfur, in easy-to-ship, solid form, will probably find its way into several applications for which imported sulfur is too costly.

It is doubtful that the ICI processes could compete in the U.S., where Frasch sulfur is abundant. But for England and other areas with a sulfate feast and sulfur famine, they could open the way to new brimstone bounties.



Miner

claims quiet, dust-free operation. A push-button panel, operated by one man, controls the turntable-mounted, telescoping jibs to position electric drills. Low-cost mining means low-cost sulfur.

BACKGROUND: PHOTOMICROGRAPH OF A LAYKOLD ASPHALT EMULSION

No lower cost multi-purpose emulsions are available to industry. Laykold Asphalt emulsions are being used as additives, extenders, adhesives, binders, coatings and sizings.

Use Laykold® Chemical Type Asphalt Emulsions to lower base material costs in your product

IDEAL PROPERTIES—Chemically inert asphalt emulsions are compatible hot or cold, wet or dry, with most resins, latices, fine fillers, fibres, aggregates, glues and other elastomers.

You can order asphalt emulsions hard or soft, ductile or "short", viscous or thin, tough or brittle.

THESE USERS ARE SAVING MONEY

1. Special *plywood resin glue* was very expensive. Extension with an emulsion cut the cost without serious loss of holding power.

2. Special asphalt emulsions of unusual stability are used in compounding *undercoaters* and *sound-deadeners*.

3. A new light-weight *building material* was bulked with a Laykold emulsion, giving added insulation and water-resistance at low cost.

4. A costly *latex emulsion adhesive* was easily extended with a compatible low-cost emulsion product.

5. A company making their own asphalt emulsions for compounding into a *flooring adhesive* found that they could purchase a basic Laykold product in bulk at less than their own manufacturing cost.

6. Both the wet and dry strengths of a variety of *paper products* were greatly improved and costs lowered by the addition of Bitusize asphalt emulsions.

7. *Mineral fillers, fibres* and *aggregates* of all kinds may be coated or bound in the moist or dry state with various Laykold emulsions, to produce unusual end products.

AMERICAN Bitumuls & Asphalt COMPANY

200 BUSH ST., SAN FRANCISCO 4, CALIF.
E. Providence 14, R.I. Perth Amboy, N.J. Baltimore 3, Md. Mobile, Ala.
Columbus 15, Ohio Tucson, Ariz. Seattle, Wash. Baton Rouge 2, La.
St. Louis 17, Mo. Inglewood, Calif. Oakland 1, Calif.
Portland 7, Ore. Washington 6, D.C. San Juan 23, P. R.

Use Our Research Laboratories—

We'll be glad to help you develop an asphalt specialty product designed to your requirements. For samples or further data, call or write our office nearest you.

NUCLEAR POWER PLANT

Cutting each of these items . . .
to this proportion of present cost . . .

Nuclear steam plant		¼
Fuel elements		
Fabrication cost[1]		⅛
Loss of irradiation life		⅕
Over-all thermal efficiency		⅔
Nuclear fuel cost[2]	about	1
Operation & maintenance cost		½
Operating factor		⅘
Processing costs		
Chemical separations		½
Waste disposal		½
Over-all cut	less than	⅓

. . . could make it economically competitive.

[1] For high temperature and long life.
[2] Assuming recycle of nuclear material as fuel.

Around the Corner?

Ever since experimental nuclear reactors became working realities, production men have become increasingly excited about tomorrow's nuclear power plant. Sometimes overlooked in the excitement has been the matter of costs.

At the experimental level, cost oversight was understandable, says AEC Deputy Director Kenneth Davis; but with the nation's first atomic-powered electric generating station (*see cut*) slated for completion in three years, it's time for a realistic evaluation.

So, at the National Industrial Conference Board Round Table meeting last fortnight, Davis made the evaluation. Unable to base any estimate on engineering experience, he used his own estimate of today's technical and economic capabilities, qualified it with optimism about future technological developments. His conclusion: to build a nuclear power plant at present that would be economically competitive with the best conventional power plant that could have been built instead, at the same time and place, current attainable costs must be slashed by about 70% (*see table*).

Such a plant, Davis figures, could be built and run under "normal and appropriate industrial financing and operating practices," would not require any direct or indirect subsidies. And though some types of power reactors undoubtedly will sell special by-product nuclear materials for more than actual recycle-fuel value, he feels that this will prove unsound, for eventually recycle value will be the only valid basis on which to estimate by-product savings.

Optimistic Outlook: One saving feature of nuclear power, Davis quickly observes, is the fact that "there is no 'law of nature' that requires nuclear power to be competitive with conventional power, now or ever." Not that it never will make the grade, he feels, it will—in time.

Among other reasons he offers for optimism:

- A group of competent engineers, having made a detailed study of nuclear power reactors, decided it will prove possible, in time, to make nuclear boilers more cheaply than conventional boilers.
- Other studies point up the fact that the cost of atomic fuel, while not negligible, is not a bar to economic nuclear power, even now.
- Some of the highest cost ratios (*see chart*)—fuel element fabrication costs, for example—are especially susceptible to cost reduction by technological improvements and mass production.
- Certain types of reactors now considered "long-range" will bypass a number of the cost factors based upon consideration of the "short-range" reactors.

Pittsburgh First? Meanwhile, work on the nation's first nuclear power plant is forging ahead at Shippingport, Pa. Scheduled for completion sometime in 1957, the plant will supply electrical power to homes and factories in the Pittsburgh area.

The plant is a joint venture: the atomic reactor is being built by Westinghouse Atomic Power Division under contract with the AEC, while the electric generating part will be designed and constructed by Duquesne Light Co., which will operate the entire works when it's finished.

Heart of the plant (*see cut*) is the reactor and the four heat exchange "boilers."

And not to be counted out of the atomic power race is the Chicago area. Currently, the AEC is discussing with Commonwealth Edison Co. the possibility of piping a "token amount" of nuclear electricity into CE's line from Argonne National Laboratory's abuilding boiling water reactor. If this deal comes off, Chicago users will see their first commercial nuclear power sometime in 1956.

ATOMIC POWER PLANT: At Pittsburgh, a model for the future.

spotlight on

crystalline structure

in stearic acid

how Emersol 132 Lily improved consistency and texture of medicinal cream

If your product's performance depends on its appearance, texture, and consistency, then this actual experience should prove helpful to you: *Case History No. 13-84 . . . Attracted by lower prices, this manufacturer of medicinal creams switched from Emersol 132 to a high-quality hydrogenated solid acid. Immediately, the non-crystalline structure of the latter product reflected in an objectionable change in the texture and consistency of the cream . . . substantially reducing its performance and sales-appeal. The switch back to crystalline Emersol 132 Lily eliminated all difficulties.* Likewise, the controlled crystalline composition of Emersol 132 will give your products the same desirable creaminess, texture and consistency time after time. This, coupled with outstanding resistance to rancidity, color stability and oxidation stability will make your products more appealing to customers, easier to sell. And since Emersol 132 costs no more than competitive triple-pressed grades, all these "extras" cost you nothing. Next time . . . buy Emersol 132 Lily.

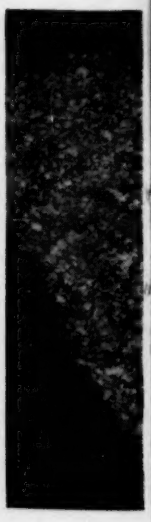
Emery

Fatty Acids & Derivatives
Plastolein Plasticizers
Twitchell Oils, Emulsifiers

Emery Industries, Inc., Carew Tower, Cincinnati 2, Ohio

New York; Philadelphia; Lowell, Mass.; Chicago; San Francisco; Cleveland; Ecclestone Chemical Co., Detroit
Warehouse stocks also in St. Louis, Buffalo, Baltimore and Los Angeles
Export: 5035 RCA Bldg., New York 20, New York

WOOD WORKS: Fast, steel-toothed saws take the big logs at 30,000 fbm./hour . . .



WATER SUPPLY: Nestled on the mountain side, high-pressure steel lines snake water 295 ft. down to the plant.

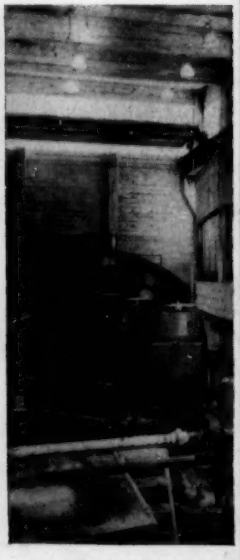
Capital for Quality

To up quality of its bleached sulfite dissolving pulp, Alaska Pine & Cellulose Ltd. early this year completed a multimillion-dollar modernization of its Port Alice (British Columbia) mill. The company, an important supplier of pulp to the processing industry as well as a heavy chemical consumer, has completed its process shakedown, is presently giving its new setup a careful year-end appraisal.

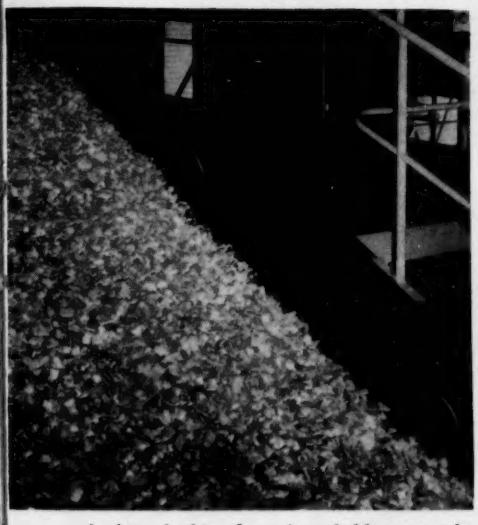
Looking at its new water supply system, wood plant, bleach plant, screen room, and power house, the company figures it has one of the most modern plants in the business, if not the most impressive works in the north woods. In the bleach plant, for example, a 62-ft. control panel gives this department of the mill a degree of control engineering comparable to any in the allied processing industries.

Of reinforced concrete construction throughout, the bleach plant is well lighted, has glass brick windows set

POWER HOUSE: More power was needed to make better pulp.



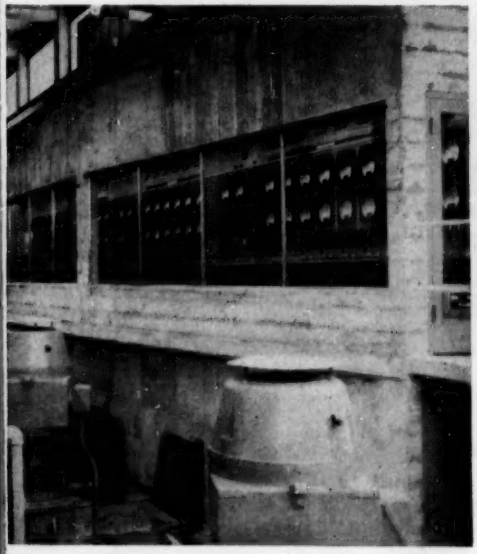
BLEACH PLANT:



. . . bark and chip them into fodder to make better raw material for cellulose processors.

high up in the walls. At the east side of the building stands the chlorination tower with a stairway running 43 ft. to the top. Screened unbleached stock, regulated by a consistency controller, is pumped directly to the base of this tile-lined chlorination tower.

Liquid chlorine is vaporized, measured by a direct-in-line flow meter, and added to the pulp in the bottom of the tower through a water injector. Mixed by a stainless steel agitator, pulp and chlorine flow upward through the tower. Stock overflowing from the top is collected in a launder, then



Automation, control panel provide the extra hands.

We want to make it

CLEAR!

. . . That was the challenge — To make a *clear* vinyl garden hose. Sales-wise it would be a natural — have great appeal. But, it had to be really clear, and it had to stand up under outdoor weathering and aging.

Advance helped solve these problems by developing ADVASTAB 52, a patented organo-tin stabilizer that gives outstanding heat and light stability, maximum transparency and glass-like clarity to vinyls.

Now the standard tin stabilizer for most superior grade clear vinyl garden hose, ADVASTAB 52.

. . . has had the longest record of satisfactory weather exposure in clear vinyl hose.

. . . is not a soap. There is no problem of water absorption as with metallic soaps which will cause consumer complaints.

. . . has no equal anywhere.

For vinyl sponge, ADVASTAB 52 eliminates sulfur staining. Also has good color retention.

Got a problem in vinyl stabilization; or perhaps one in improving the quality and performance of paints (another field where ADVANCE is the leader)? Bring it to ADVANCE—always the top source of quality.

ADVANCE

SOLVENTS & CHEMICAL CORP.

245 Fifth Avenue • New York 16, N. Y.

Additive Chemicals for the Process Industries

at the frontiers of progress you'll find...

IMPROVED WITH

VINOL

(POLYVINYL ALCOHOL)

Your product will enjoy wider acceptance for better sales and increased profit when you use Colton VINOL Polyvinyl Alcohol. New products and applications are also possible with this water-soluble, film-forming resin.

Let Colton—a dependable source for quick delivery—show you how Adhesive, Plastic, Textile, Paper and Packaging applications can benefit from VINOL Polyvinyl Alcohol. Rigidly controlled for uniformly high quality. Free-flowing and fast-dissolving—white and non-gelling.

For samples and information write Department 28

SPECIFICATIONS

VINOL Polyvinyl Alcohols now available in following grades:

PA-5, PA-20, PA-40
(88% hydrolyzed)
Low, medium and high viscosity partially-acetylated grades

FH-100, FH-400, FH-500, FH-600
(99+% hydrolyzed)
Low, medium and high viscosity fully-hydrolyzed grades

COLTON CHEMICAL COMPANY

A Division of Air Reduction Co., Inc.
1545 East 18th Street • Cleveland 14, Ohio

Sales Offices and Warehouse Facilities also in New York City, Chicago, Spartanburg, Dallas, Seattle, Portland, San Francisco, Los Angeles

PRODUCTION . . . . . .

gravity fed to No. 1 washer.

After shredding, stock is discharged onto a conveyor. This belt, running on white glazed tile, delivers pulp to a battery of six second-stage reactors at 450 fpm. The stock is chemically treated, automatically discharged into a dump chest. From the dump chest, the stock passes through a series of additional washers and reactors, through a fifth-stage dump chest, into the final washer. It is then discharged to the bleached stock chest.

The entire operation is carried out by three operators per shift. And in the new wood plant, too, many of the operations are automatically controlled either by direct linkage or by push button and solenoid valve from a panel at the head of the concrete log haul. A whole-log barking and chipping unit, this plant was designed to handle average logs at the rate of 30,000 foot board measure/hour.

EQUIPMENT . . . .

Fast Couple: A new type of thermocouple for measuring rapid changes of metal wall temperatures has been developed by Midwest Research Institute (Kansas City, Mo.). Requiring only ¼ microsecond to record fast-changing surface temperatures, the thermocouple is available in two models for use in thick or thin walls.

•

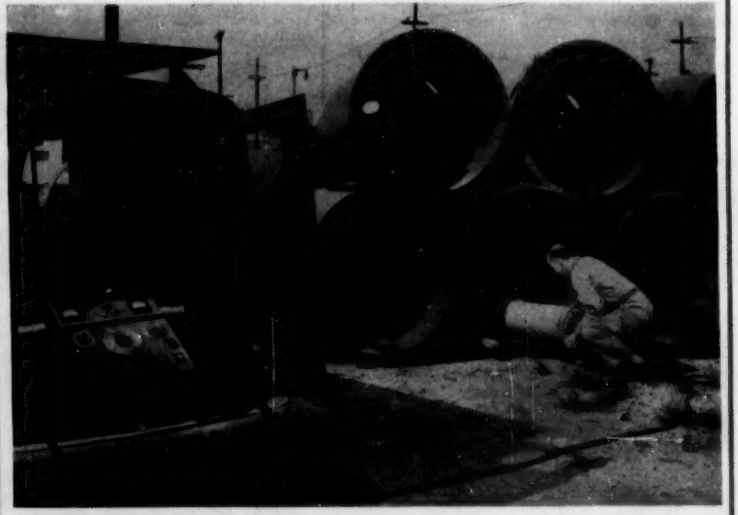
Batch Weigher: Thurman Machine Co. (Columbus, O.) is marketing the new Thurma-tronic electronic batching system for continuous process industries. Adaptable to either accumulative or consecutive weighing, the system may be set for from one to any specific number of batches, or for completely automatic continuous batching.

•

Sanitary Pump: Product purity is safeguarded, says Vanton Pump & Equipment Corp. (New York), by the use of its new Sani-flex pump. Isolated from all moving parts, fluids are pumped by the squeegee action of a flexible molded neoprene liner inside a polished stainless steel housing.

•

Compact Filter: Filtering area and volume are increased, claims Bart-Messing Corp. (Belleville, N.J.), by the new filtration principle employed in its Sel-Rex filters. They use bag-type elements supported by corrugated stainless steel and wire mesh, and have twice the capacity of conventional filters with similar space requirements. Available in portable models for up to 2000 gal./hour, in stationary models up to 18,000 gph., Sel-Rex filters are suitable for handling both acid and alkaline solutions.



Inside-Out View

RADIOGRAPHER prepares to X-ray circumferential weld with a single exposure using General Electric's new portable X-ray model OX-175. The unit produces a 360° radiation sweep to take "inside out" views of pipes or pressure vessels. This technique, which places the X-ray tube head inside the object, confines radiation and increases protection to personnel against exposure.

FAMOUS LIGHTHOUSES OF AMERICA

CAPE HENRY LIGHT, located on the south side of the entrance to Chesapeake Bay, was the first lighthouse to be built by the United States. The octagonal tower of sandstone, 129 feet high, was constructed of materials gathered while Virginia was still a colony. This original structure still stands, though it was damaged during the Civil War and is no longer in use. It was replaced in 1881 by the present lighthouse, a cast iron tower 167 feet high, located 337 feet to the northeast.

Pointing the way to progress in the development and use of electrochemicals is the pioneering research of Niagara Alkali Company. Niagara was the first in the country to produce several of these important materials and through research is constantly improving the usefulness of Nialk® Liquid Chlorine, Nialk Caustic Potash, Nialk Carbonate of Potash, Nialk Caustic Soda, Nialk Paradichlorobenzene, Nialk TRICHLORethylene, Niagathal® (Tetrachloro Phthalic Anhydride).

NIAGARA ALKALI COMPANY

60 East 42nd Street, New York 17, N. Y.

Will your new plant need ABUNDANT WATER... surface or underground?

Here's a site in Huntsville Alabama, with plenty of both!

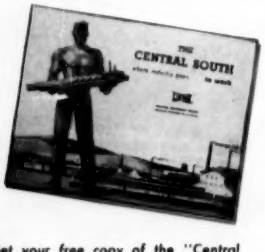
It's located 12 miles south of Huntsville, Alabama—right in the heart of the Central South . . . America's fastest growing region. Eleven hundred acres of ideal building sites with no surface rock. A deep clay sub-soil with heavy load-bearing characteristics make it ideal for building foundations. A complete engineering study has been made on the site and grading costs are known to be unusually low. A paved access road serves the site. Additional highway facilities will be constructed by the city and county, as needed. For full particulars, without charge or obligation, about this, or other sites in the Central South, write:

G. G. BARBEE, General Industrial Agent
The Nashville, Chattanooga & St. Louis Railway
203-C Union Station
Nashville, Tennessee

N.C.&St.L. THE NASHVILLE, CHATTANOOGA & ST. LOUIS RAILWAY

Plus these important factors:

- √ Low cost electric power
- √ Available natural gas
- √ Large pool of native-born skilled labor
- √ Site conveniently located on the N. C. & St. L. Railway
- √ Community served by 2 railroads, two U. S. Highways, 2 airlines, and the Tennessee River
- √ Favorable tax laws
- √ Pleasant living conditions
- √ Mild climate for year 'round operation



Get your free copy of the "Central South—Where Industry Goes . . . to Work." This colorful new brochure tells why more and more industries are relocating or building branches in the Central South.

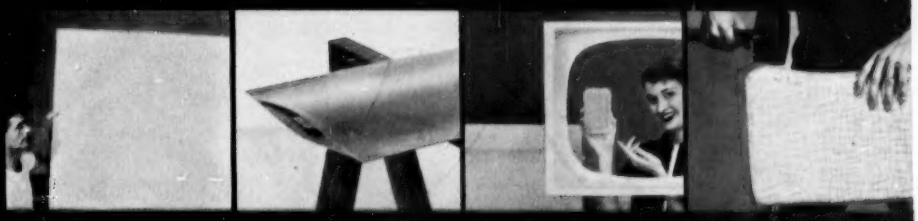
Your success tomorrow may depend on opportunities today in the new methods, materials, processes taking root in American industry.

Here is a . . .

MONSANTO
CHEMICALS — PLASTICS
SERVING INDUSTRY . . . WHICH SERVES MANKIND

Preview

of New Ideas
New Products
New Profits
for Industry



New Chip-core Flat Panels

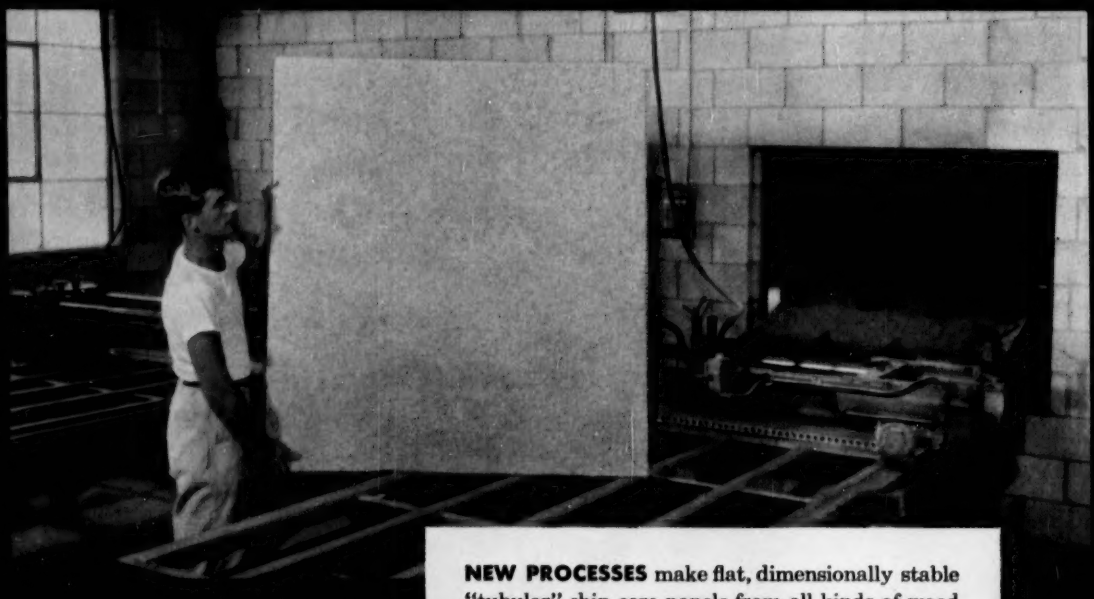
Non-sag Plastic Sheets

Heat-formed Plastics

Molded Granulated Wood

MONSANTO
CHEMICALS — PLASTICS

Lowering costs of furniture manufacture, home building

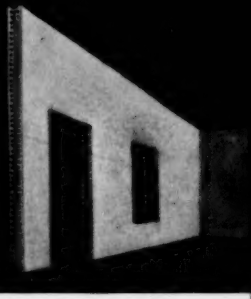


NEW PROCESSES make flat, dimensionally stable "tubular" chip-core panels from all kinds of wood scrap and sawmill discard. Ground wood chips are bonded into an inert core stock with Monsanto resins—thickness can be varied from 9/16-in. to 1 3/8-inch. Standard 4-ft. widths can be continuously "extruded" to any specified length—panels are available already veneered or as plain core stock . . . Write Monsanto for further information.

COST REDUCTIONS range from 15% to 40% on flat panels for office furniture, doors, cabinets.

YOUNG HOMEMAKERS will see lower prices. Hardwood veneers, melamine overlays, sheet aluminum, bond readily to the cores.

BUILDERS and pre-fab home manufacturers are impressed with the unusual strength, nail- and screw-holding power of light, "tubular" construction.

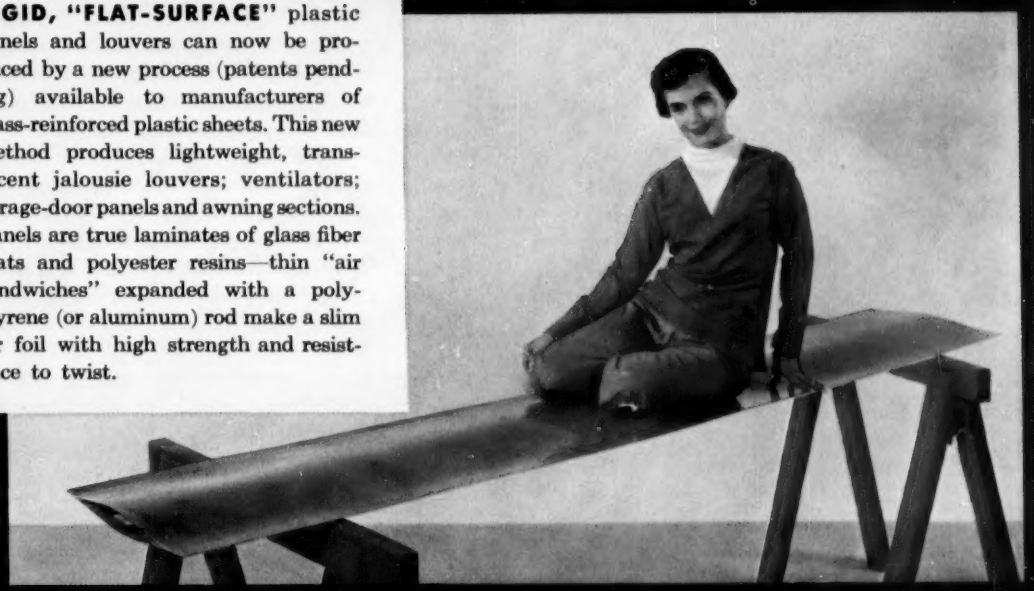


HOME DEVELOPERS will welcome savings in framing and insulation with these load-bearing panels—edge-routed to accommodate door and window studs.

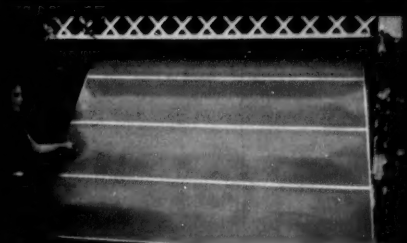
MONSANTO
CHEMICALS—PLASTICS

Flat, non-sag plastic louvers open many new product fields

RIGID, "FLAT-SURFACE" plastic panels and louvers can now be produced by a new process (patents pending) available to manufacturers of glass-reinforced plastic sheets. This new method produces lightweight, translucent jalousie louvers; ventilators; garage-door panels and awning sections. Panels are true laminates of glass fiber mats and polyester resins—thin "air sandwiches" expanded with a polystyrene (or aluminum) rod make a slim air foil with high strength and resistance to twist.



SHATTERPROOF JALOUSIE LOUVERS, that fit standard hardware, can be ordered in many sizes, colors. Louvers admit soft, diffused light.



PLASTIC-ALUMINUM GARAGE DOORS—foreseen as a major use—are already available. Doors are lightweight, strong, require no painting.

NEW PRODUCTS, such as adjustable vent awnings and swivel-open walls for homes and meeting rooms, can be designed with these sturdy, versatile panels . . . Write Monsanto for the names of manufacturers.

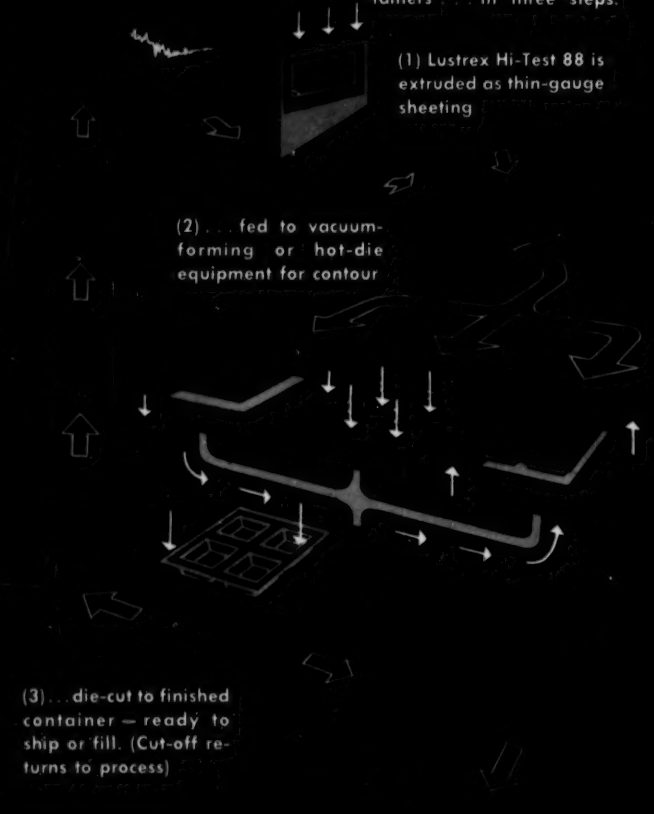
MONSANTO
CHEMICALS—PLASTICS

Disposable plastic packages made by simple heat forming

NEW FIELDS FOR PLASTICS! Starting with Monsanto Lustrex Hi-Test 88 high-impact styrene molding powder, thin sheets can be extruded—then vacuum formed or hot pressed to a variety of contoured shapes. Light, strong industrial parts, TV masks, trays, displays and containers are now being rapidly and economically made. Plastic molders can vacuum form or hot-die press "on-order" at a fraction of former tooling costs—start deliveries in days instead of months . . . Write for information.

Lustrex Reg. U. S. Pat. Off.

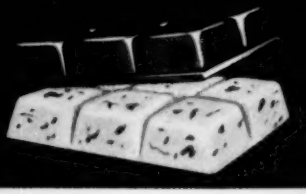
MOST PROFIT-PROMISING is continuous forming of strong, incredibly light, thin-walled disposable plastics containers . . . in three steps.



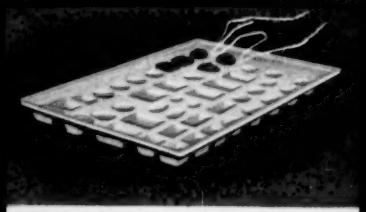
(1) Lustrex Hi-Test 88 is extruded as thin-gauge sheeting

(2) . . . fed to vacuum-forming or hot-die equipment for contour

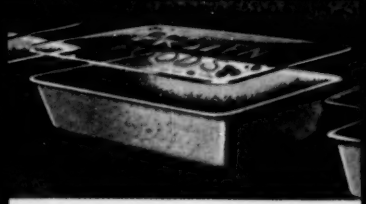
(3) . . . die-cut to finished container — ready to ship or fill. (Cut-off returns to process)



INVESTIGATE this process for "portion-molded" ice cream, frozen dessert, gelatin salad containers.



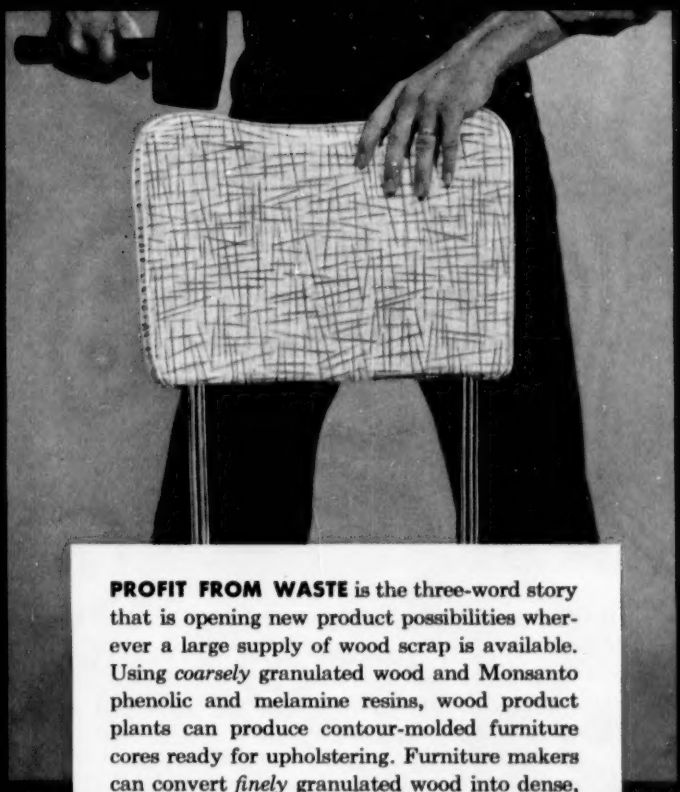
EVALUATE advantages of protective "pocketed" packages for premium candies, fruits, confections.



EXPLORE thin-walled, watertight, top-sealed containers for packaging many varieties of frozen foods.

MONSANTO
CHEMICALS – PLASTICS

Molding furniture of granulated wood saves shaping, finishing



PROFIT FROM WASTE is the three-word story that is opening new product possibilities wherever a large supply of wood scrap is available. Using *coarsely* granulated wood and Monsanto phenolic and melamine resins, wood product plants can produce contour-molded furniture cores ready for upholstering. Furniture makers can convert *finely* granulated wood into dense, smooth-surface products that come "finished" from the mold . . . Write for more information.

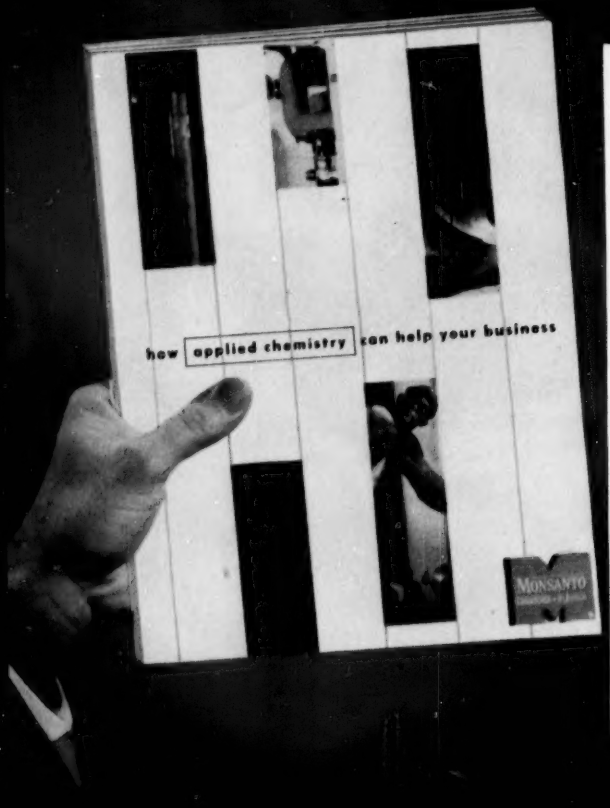
DRILLING the cores smoothly is easy—they have high strength and good screw-holding properties.

SMOOTH, LUSTROUS surfaces are obtained by controlling size of wood particles and resin content.

MOLDING FINISHED FURNITURE is in its early development. Contoured designs such as these can be produced more economically by molding granulated wood than by any other woodworking method. Write for booklet, "Multiply Profits by Molding Granulated Wood."

MONSANTO
CHEMICALS – PLASTICS

New Opportunities... Through Applied Chemistry



COULD CHEMICALS AND PLASTICS HELP YOUR BUSINESS?

In modern industry, the products of applied chemistry fill countless needs —from processing to packaging. Being one of the world's leading manufacturers of chemicals and plastics, Monsanto can be a reliable source of products and information on chemically made materials that may be new to your business. This new book, "How Applied Chemistry Can Help Your Business," tells why! May we send your copy at once? Write on your company letterhead, or use the coupon. Address Monsanto Chemical Company, Industrial Counsel Dept., St. Louis 4, Mo.

NOTE: When you are evaluating new materials—chemicals or plastics—for new products, quality improvements or cost reduction, you are invited to consult Monsanto. Write on your company letterhead.

Monsanto Chemical Company
Industrial Counsel Department C
St. Louis 4, Missouri

( ) Please send copy of
"How Applied Chemistry Can Help Your Business"

Name.....Title.....

Company.....

Street.....City, Zone.....State....

MONSANTO
CHEMICALS – PLASTICS

SERVING INDUSTRY...
WHICH SERVES MANKIND

104-3

PILOT PLANT: Set up for the customer, it's helping Picco develop . . .

Small-Firm Sales Formula

If you want a customer to use more of your products, you have to show him more ways to use them. Among the giants of the chemical industry, this philosophy is the basis of action. Among the smaller companies, with limited funds for sales development, however, this philosophy can be a goad to anxious probing. But at least one firm outfit thinks it has discovered how to use it.

A miniature operating on an enlargement basis: that's the system being followed today at Pennsylvania Industrial Chemical Corp., Clairton, Pa.

"We're a relatively small company," claims Robert Ostermayer, sparkplug president of Picco. "We want to stay that way, too. And we're developing a sales policy designed to give our customers big-company service with small-company facilities."

For Picco, this small-operator big-operation service is extremely new. Although actually among the world's leading producers of low-cost synthetic resins, until recently the company has never even had a sales organization of its own. As late as 1951, it operated entirely through house accounts and sales brokers who worked on a straight commission basis.

In order to realize his sales dream, Ostermayer has been building a strongly integrated set of services.

Briefly, this is the new lineup:

- A sales organization responsible to the home office.
- An entirely new technical sales research laboratory.
- A process engineering department to help customers locate suitable standard equipment and machinery.
- A pilot plant for additional testing to help customers apply new uses to their own products.

Buildup: The new sales setup is Ostermayer's special pride, for he realizes that his increased sales service idea calls for the highly trained force usually afforded only by much larger companies.

Believing his company had much to offer, he developed incentives that would likely attract top-notch men. Example: the profit-sharing plan begins after just one month's employment, the pension plan after five years.

As of today, the sales staff shapes up like this:

- At the top is F. W. Corkery, vice-president in charge of sales and development.
- The next echelon is shared by Jack Wilson, sales manager, and F. W. Elliott, technical sales manager. Wilson's bailiwick is field sales; Elliott's, the technical backstopping.

In field sales, one development has been the setting-up of district managers who, in turn, work closely with outside distributing agents. District units now include managers in New York, Chicago, Detroit, Pittsburgh, Philadelphia and the West Coast.

The company's sales nucleus, about 25 graduate chemists or chemical engineers, have all had from 5 to 10 years' experience in industrial chemical sales in addition to their college training. But even as the giants of the industry are doing, Picco is now beat-

PICCOPALE FOR PAINT: Sales lab looks for dispersing agent market.

SS MARINE CHEMIST
ONE OF MARINE TRANSPORT LINES
SPECIAL CHEMICAL CARRIERS

DEPENDABLE
OCEAN
TRANSPORTATION

WE ARE
SPECIALISTS

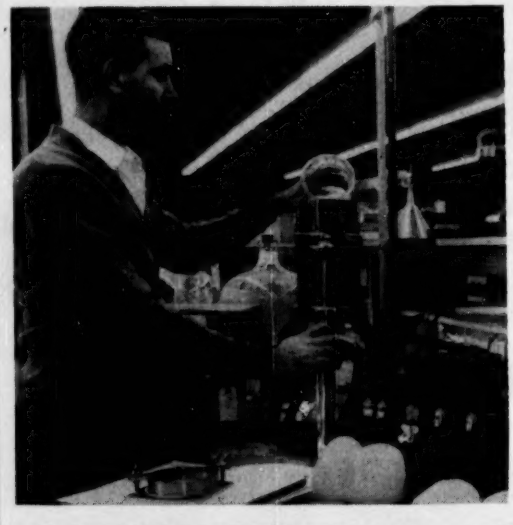
Our experience enables us to provide economical and dependable ocean transportation of your bulk liquid or dry chemicals, with particular attention to maintenance of product purity to most exacting specifications.

YOUR INQUIRIES WILL BE ANSWERED PROMPTLY AND CONFIDENTIALLY

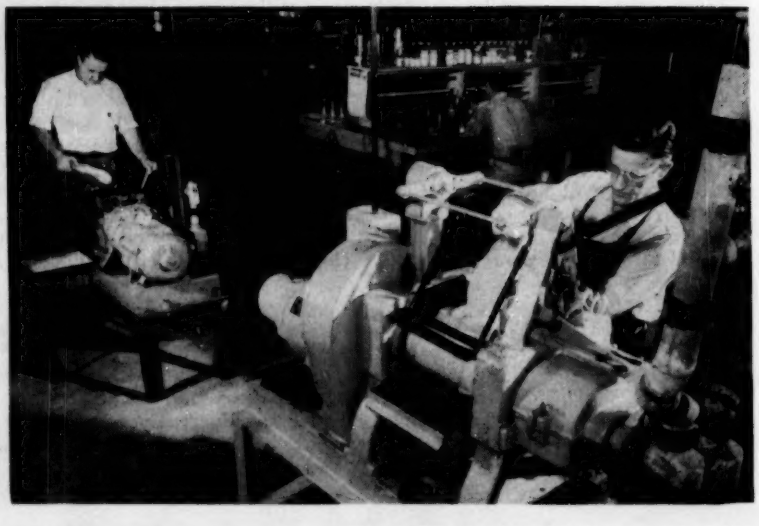
MARINE
TRANSPORT
LINES, INC.
11 Broadway New York 4, N.Y.

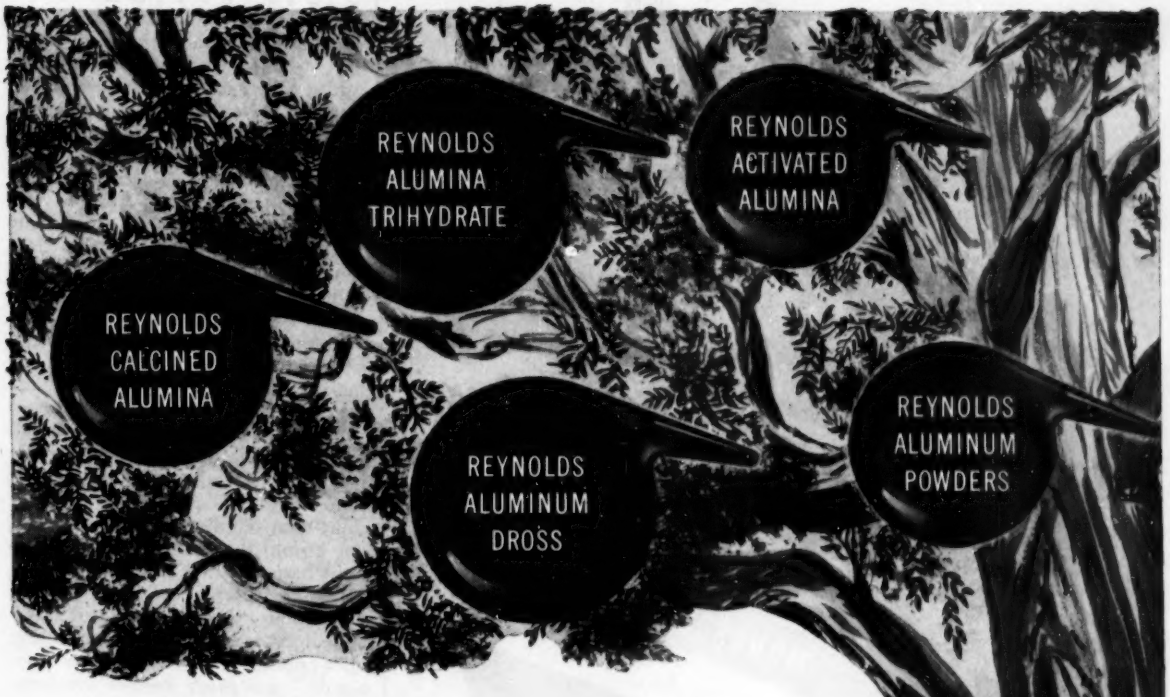
Story begins on p. 55

COATING tests on TV capacitors and floor felt, by chemist Simsel and Lab Mgr. Kelly, may open doors to new sales.



PAPER sizing checks and floor tile tests will lend weight to sales arguments, lead way to new resin customers.





A family tree that's really growing...

REYNOLDS Aluminum CHEMICALS

Springing from a firm foundation of bauxite mines, Reynolds offers a growing family of high quality aluminum chemicals. If your products or processes are included below, look to Reynolds Chemicals.

Alum, chemicals, catalysts, glass: Reynolds Organic Free Alumina Trihydrates are whiter and purer than any other similar products.

Air or gas drying: Reynolds Activated Alumina is a high quality and efficient desiccant.

Abrasives, frits, glazes, refractories: Low cost Reynolds Calcined Aluminas may be able to replace more expensive aluminas.

Paints, explosives, reducing agents: Investigate Reynolds wide range of Aluminum Powders.

Test samples of any of these chemicals are available for your evaluation.

Write for free descriptive brochure "Reynolds Aluminum Chemicals," Reynolds Metals Company, 2569 South Third Street, Louisville 1, Kentucky.

A fresh approach to new applications and new solutions to your problems is available from Reynolds chemical and engineering specialists . . . in the field and home office.

FROM THE PRODUCERS OF REYNOLDS ALUMINUM

DISTRIBUTION. . . .

ing the college graduating class bushes for young candidates. Youngsters added to the staff will undergo an 18-months' indoctrination course at the Clairton and Chester, Pa., plants before going afield.

Backstops: First defense behind the sales firing line is the entirely new sales laboratory, which moved into its own separate building at the Clairton plant in September. (Formerly all technical sales research was performed at the regular research laboratory at Chester.) It employs about 30 chemists and engineers, concentrates on finding diversified uses for company products, answering specific customer problems, and checking on new products for future distribution.

Behind the sales laboratory move: the company's awareness that the short-term application research did not fit into the framework of a long-term basic research laboratory.

For Example: In the accompanying illustrations, several technical sales laboratory researchers are evaluating sales application possibilities for "Piccopale," the firm's newest synthetic hydrocarbon resin.

That's a typical link of the new chain of sales development. Previously, the salesmen have been selling Piccopale for test purposes. Confident, for instance, that corrugated paper is a sure-fire application, the company is following up tests made in 12 different corrugated plants. And as a continuing part in their teamwork with the salesmen, the lab men are keeping close check on the test sales. They will also go into the field, if need be, and work directly with the customer in his own control laboratory.

Following any promising test results, the next member of the team, the process engineering department, will carry the ball. It will help locate equipment that might get the customer in business faster, reduce his cost.

Still Small: Finally, there's the new pilot plant. It's at this stage that Picco, intending to stay a relatively small organization, diverges from aims of most large companies. For while it is vitally interested in developing new uses for its products, and even goes so far as to set up pilot plants to improve its developmental work, it's not interested in diversifying its own manufacturing facilities. Picco prefers to develop a process, give it to the customer, help him set it up, teach his men the operation; then concentrate on selling the customer raw materials for his job.

That's Robert Ostermayer's secret of enlarging his company's scope while still hanging onto its low-cost miniature size.

BECCO® BRIEFS

EPOXIDATION-HYDROXYLATION

Manufacturers of insecticides, waxes, resins, plasticizers and stabilizers, pharmaceuticals, organic intermediates and other products are using HYDROGEN PEROXIDE and PERACETIC ACID increasingly for oxidation reactions, epoxidation, hydroxylation, ring-splitting reactions, quinone formation, and free radical reaction.

Cleanliness, efficiency, high oxidation potential, high specificity and minimum by-products are characteristic of reactions using peroxygen chemicals.

Properties of Becco Peroxygen chemicals and their current and potential uses are described in Becco's complete and authoritative bulletins. Send for your copy of Becco's Bulletin List.

Buffalo Electro-Chemical Company, Inc.

DIVISION OF FOOD MACHINERY AND CHEMICAL CORPORATION

fmc

Sales Agent: BECCO SALES CORPORATION, Station B, Buffalo 7, N.Y.
Buffalo • Boston • Charlotte • Chicago
New York • Philadelphia • Vancouver, Wash.

Please send me the Becco Bulletin List from which we may select bulletins of interest to us.

Name .....

Company .....

Street ..... Zone ..... State .....

City .....

Investigate TRONA'S ELEMENTAL BORON

How will it fit your development picture?

Amorphous Elemental Boron is another intriguing chemical from Trona's pioneering research in boron chemistry. A curiosity for more than fifty years, elemental boron is now a commercial reality. As little as 1/10,000 of an inch coated on silicon wafers turns sunlight into electricity. Trace amounts in steel save up to 50% of scarce alloying elements. Trona's 90% plus pure Boron is busy in research laboratories all over the nation and may have important applications in your own Research and Development program. Write today, giving us the opportunity of working with you. Small experimental purchases are welcomed.

TRONA
INDUSTRIAL AND AGRICULTURAL CHEMICALS

Sales Development Department
American Potash & Chemical Corporation
3030 West Sixth Street, Los Angeles 54, California

Film Costs Aired

Chemical advertising and public relations executives will find, in a just-released study by the Assn. of National Advertisers,* an answer to a question. This 128-page book aims to answer, for the first time anywhere: What does it cost to produce and distribute a movie for advertising or public relations purposes?

Based on a survey of 157 non-theatrical films costing $12 million, "The Dollars and Sense of Business Films" reveals heretofore-confidential data on actual production, print, distribution costs and methods for films produced by 67 of the nation's leading companies. About a dozen of these film sponsors are well-known chemical manufacturers.

Some of the survey's findings:

- The typical company spends 4.6¢ to obtain 26 minutes of one viewer's time to convey its message.
- If a film is carefully pitched for a broad, general audience, its cost per viewer can drop to as low as 0.3¢ over the life of the film.
- The average useful film life is usually five years, often more.
- The median cost of a successfully produced nontheatrical film is $25,800.
- Color films are favored four-to-one. And with color television under way, this ratio can be expected to rise.
- Typical cost breakdown of film budget: production, 55%; release prints, 26%; distribution costs, 19%.
- While 91% of all films are circulated in part or entirely by the sponsor, at least one-third are also handled by commercial distributors.
- Television, instead of competing with traditional institutional film, appears to be furnishing sponsors an extra distribution medium.

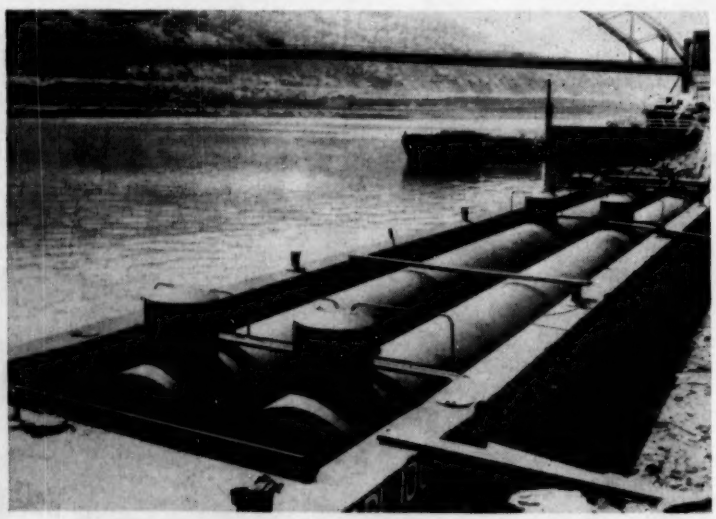
With around 500,000 16mm. sound projectors now available in this country, the average business film can be expected to reach an audience of 276,000/year.

•

For Your Reference: Automatic drum fillers—a brochure giving details of operation, machinery descriptions, and a mathematical formula to determine the economics of actual use. The Rucker Co., Oakland, Calif.

- Petroleum inspector's tag manual —provides procedures to determine basic physical and chemical charac-

* 285 Madison Ave., New York 17, N.Y.

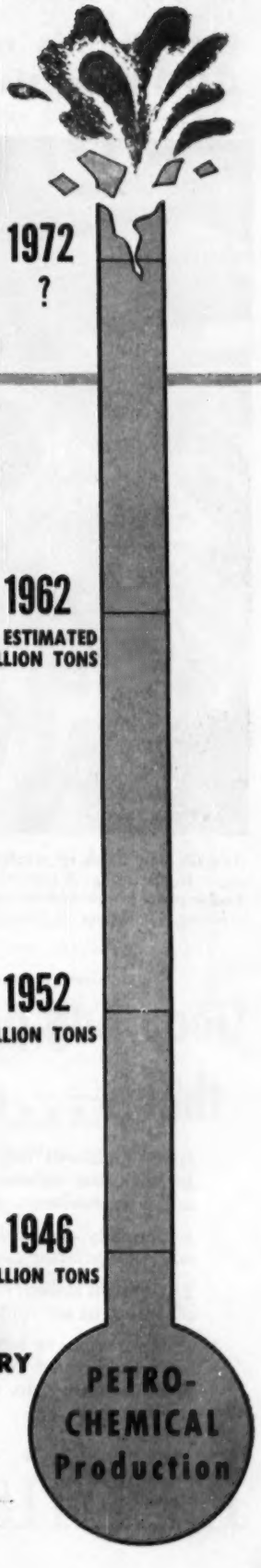


Keeping the Caustic Hot

WARMING UP solidified chemical solutions for delivery pump-out sometimes can be avoided. By using glass block insulation protected from the elements by Insul-Mastic asphalt coating, the Pennsylvania Salt Co. finds that concentrated caustic can be pumped hot, delivered warm and fluid. This, claim company officials, cuts costs previously spent on steam and labor to unload the tanks. The barge, with two insulated, weatherized, 54,000-gal. tanks, is now in service.

Petrochemical

PRODUCTION IS ZOOMING UP IN OKLAHOMA



and the future couldn't be brighter . . .

50%* OF TODAY'S ORGANIC CHEMICALS COME FROM Petroleum

OKLAHOMA OFFERS NATURAL RESOURCES WITH TREMENDOUS RESERVES . . . *Consider:*

Crude Oil Reserves	almost **2 Billion** barrels
Natural Gas Reserves	more than **12 Trillion** cubic feet
Natural Gas Liquid Reserves	**three hundred million** barrels
Liquid Hydrocarbon Reserves	over **2 Billion** barrels
Underground Coal Reserves	**55 Billion** tons

All this . . . and WATER, too! Oklahoma can furnish industry from ONE to 50 MILLION GALLONS of industrial water PER DAY—PER PLANT!

within 24 hours shipping of

- 37,822,000 Population....who receive
- $53,714,000,000 Income.....
  and who have
- $37,262,743,000 Bank Deposits....
  and create
- $39,301,759,000 in Retail Sales

. . . and all within a 500-mile radius!

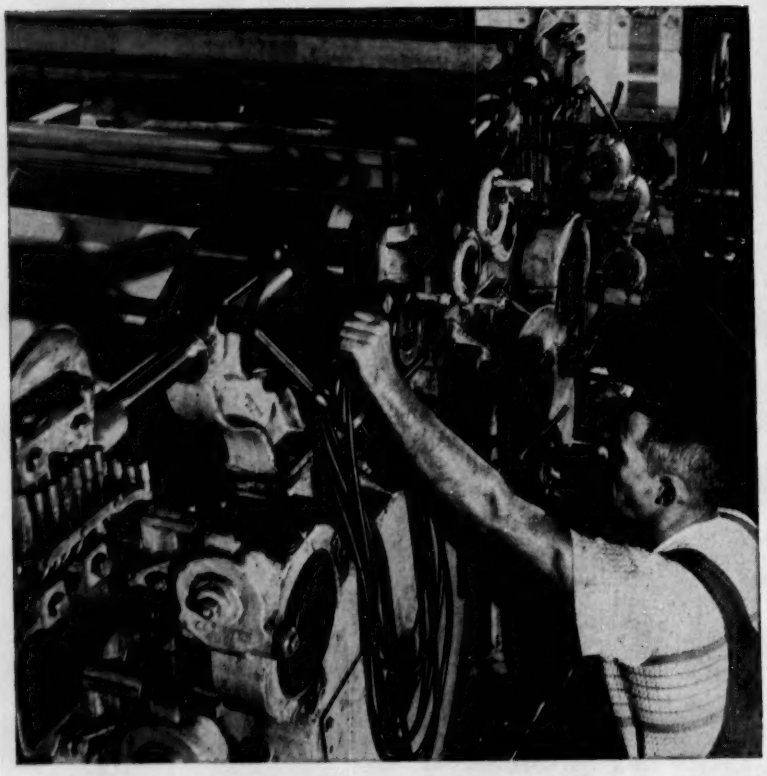
*Approximate percentage based upon the findings of a recent BLAW-KNOX survey.

OKLAHOMA SERVES THE CHEMICAL INDUSTRY

OKLAHOMA
PLANNING AND RESOURCES BOARD
Write – Czar Langston, *Director*
State Capitol Bldg.
Oklahoma City, Okla.

No. 3 of a series

How Bemis makes GOOD multiwall bags for you



As with other types of printing, there is no substitute for experience in multiwall paper bag printing. A typical Bemis pressman is Wesley Pitcher, shown here at the 4-color press he operates at the Bemis plant in Peoria. Wesley went to work in the printing department 21 years ago and has been a pressman for 18 years.

Good bag printing requires three things . . . and Bemis has 'em!

Good multiwall bag printing . . . the kind that makes your brand a star salesman . . . requires good presses, good plates and good workmen. *And Bemis has 'em!*

1. Specially designed presses . . . with features needed for *best multiwall printing* . . . are used.

2. Our own skilled, experienced plate makers make our printing plates . . . so we control quality every inch of the way.

3. Since we have been making and printing quality multiwalls for twenty-seven years, we have trained our pressmen to the point that they do, day in and day out, the best printing in the bag industry.

Bemis

General Offices—St. Louis 2, Mo.

Sales Offices in Principal Cities

DISTRIBUTION. . . .

teristics of oil and its derivatives. Conversion, gasoline specification, and steam temperature tables complement the book. Fisher Scientific Co., Pittsburgh.

• Vinyl dispersion resin—a technical bulletin supplying information on the application of plastisol coatings to wire goods, paper, fabric, foil, and electrical assemblies. Technical release No. 14, Bakelite Co., New York City.

• Tertiary alkyl primary amines—32-p. technical bulletin containing data on the physical and chemical properties of five amines, and outlining suggested applications. Rohm & Haas Co., Special Products Div., Philadelphia.

• Trade lists of foreign business firms—recently published lists of interest to chemical companies: chemical importers and dealers, Panama; fertilizer manufacturers and exporters, Peru; medicinal and toilet preparation importers and dealers, Guatemala; mining companies and ore exporters, Bolivia; paint, varnish and pigment importers, Japan; the textile industry, Hong Kong. U.S. Dept. of Commerce, Washington 25, D.C.

• Foreign trade zones in the U.S.—provides information on facilities, handling of foreign goods with domestic material for foreign shipment without payment of duty, and legal and administrative aspects of trade zone use. Organization for European Cooperation, Washington, D.C.

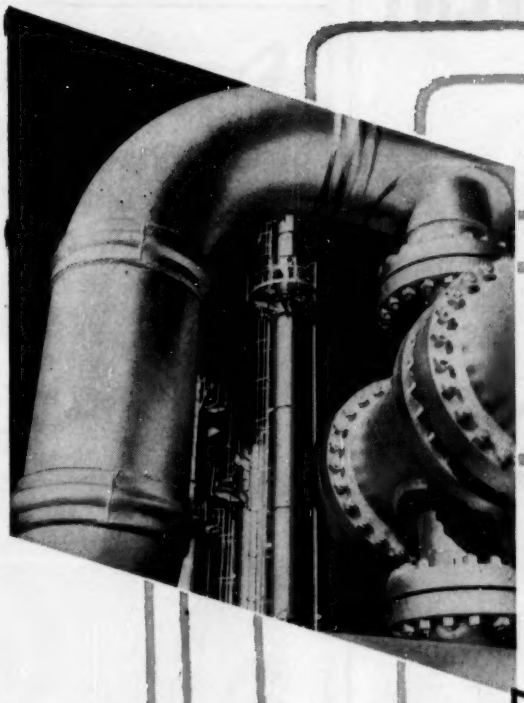
• Color change—a report on current color trends and preference cycles. Monsanto Chemical Co., Plastics Div., Springfield, Mass.

• Directory of the chemical and oil industries—contains lists of companies by states, company headquarters and plant sites, principal officials, products, and trademarks. 1954 edition, H. D. Allen, Publisher, Philadelphia.

• Steel Drum and Pail Standards—collection of standards for various-size tight-head and full-removable-head universal drums and pails. Steel Shipping Container Institute, New York City.

• Cyclopentane and cyclohexane derivatives and Grignard reagents are the subjects of two brochures by Arapahoe Chemical (Boulder, Colo.). Specification tables, handling procedures, and chemical reaction data are included.

• trans-1,2-Dibenzoylethylene—new technical bulletin furnishing an outline of principal reactions, physical properties, and bibliography. National Aniline Div., Allied Chemical & Dye Corp., New York City.



HELPING YOU SOLVE THE AMAZING MAZE

The complicated technology required for modern chemical processing is a constant and changing challenge to the industry.

Pritchard designers, engineers and construction superintendents have proved their ability to help the industry meet that challenge. Pritchard's experienced personnel is available to you . . . to cooperate with your own engineering staff to produce the installation you need as fast and as economically as possible.

If your present or future plans for modern, efficient facilities demand exceptional skills in the transition from drawing board to reality, be sure you contact Pritchard.

Industry's Partner for Progress

J.F. Pritchard & Co.

ENGINEERS · CONSTRUCTORS

Dept. 374, 210 West 10th St., Kansas City 5, Mo.

CHICAGO • HOUSTON • NEW ORLEANS • NEW YORK
PITTSBURGH • ST. LOUIS • TULSA

SERVING THE GAS, POWER, PETROLEUM AND CHEMICAL INDUSTRIES

AMAZING NEW SOLVENT

☆ no fire hazard

☆ extremely low toxicity

☆ safe for all metals

☆ extra-high solvency

CHLOROTHENE

A product of Dow Chemical and certainly the finest cold cleaning solvent yet produced. Fully the equal of carbon tetrachloride in cleaning power and drying time yet no more toxic than the petroleum naphthas. Completely nonflammable and safe for all metals, including aluminum, brass, magnesium.

FOR SAFER — FASTER — BETTER CLEANING

write or phone the nearest stock point.

THE SOLVENTS and CHEMICALS GROUP

2540 WEST FLOURNOY STREET, CHICAGO 12, ILLINOIS

AMSCO SOLVENTS & CHEMICALS CO.
CINCINNATI 29, 4619 Reading Road
MElrose 1910

BUFFALO SOLVENTS & CHEMICALS CORP.
BUFFALO—Box 73, Station B
Bedford 1572

CENTRAL SOLVENTS & CHEMICALS CO.
CHICAGO—2540 W. Flournoy St.
SEeley 3-0505

DIXIE SOLVENTS & CHEMICALS CO.
LOUISVILLE—Dixie Highway at Appleton Lane
ATwood 5828

HOOSIER SOLVENTS & CHEMICAL CORP.
FORT WAYNE 8, Nelson Rd. East
ANthony 0213

INDIANAPOLIS 22, 1650 Luett Ave.
MElrose 8-1361

MISSOURI SOLVENTS & CHEMICALS CO.
ST. LOUIS 7, 419 De Soto Ave.
GArfield 1-3495

OHIO SOLVENTS & CHEMICALS CO.
CLEVELAND 11, 3470 W. 140th St.
CLearwater 1-3770

SOUTHERN SOLVENTS & CHEMICALS CORP.
NEW ORLEANS—1354 Jefferson Highway,
P. O. Box 4067 Carrollton Station
Temple 4666

TEXAS SOLVENTS & CHEMICALS CO.
HOUSTON—8501 Market Street
Orchard 6683

WESTERN SOLVENTS & CHEMICALS CO.
DETROIT—6472 Selkirk Avenue
WAlnut 1-6350

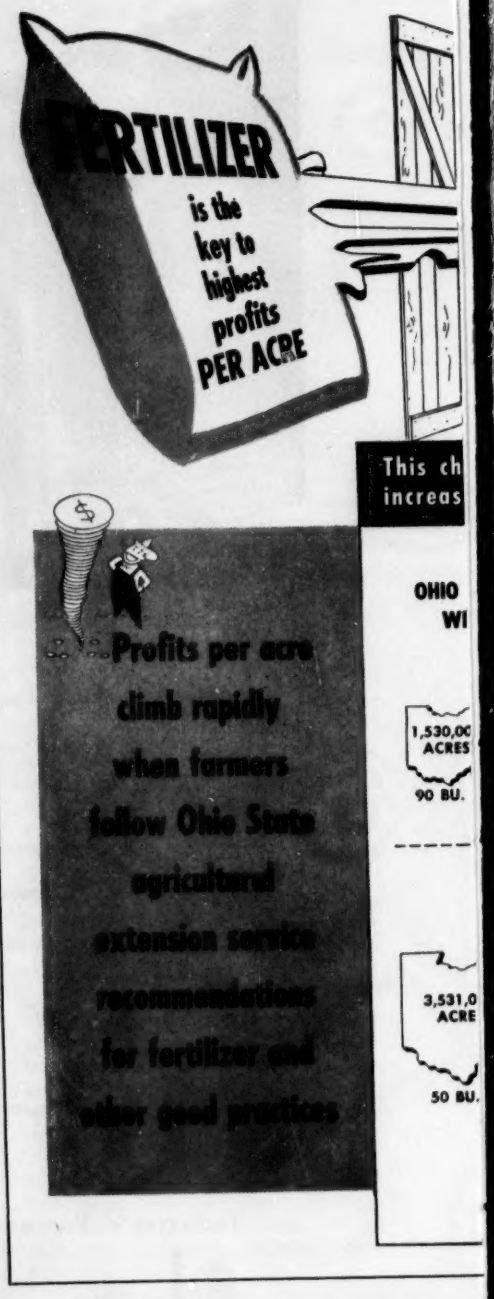
WESTERN SOLVENTS & CHEMICALS CO.
TOLEDO—Central Avenue at Reynolds Rd.
Jordan 0761

WESTERN SOLVENTS & CHEMICALS (Can.) Ltd.
WINDSOR—1454 Crawford Street
Clearwater 2-0933

WISCONSIN SOLVENTS & CHEMICALS CORP.
MILWAUKEE—1719 South 83rd Street
GReenfield 6-2630

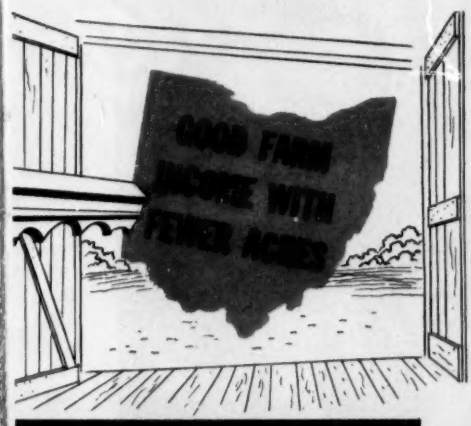
WOLVERINE SOLVENTS & CHEMICALS CO.
GRAND RAPIDS—1500 Century Ave., S.W.
Grand Rapids 5-9111

DISTRIBUTION . . . . . .



In Defense of Fertilizer:

RISKING no chances that the trade will be accused of swelling farm surpluses, the National Fertilizer Assn. is busily distributing these leaflets to farmers. Based on Ohio State University data, NFA shows intensive fertilization and crop surpluses aren't necessarily synonymous. In fact, it's even



art shows how Ohio farmers can
e income with less acres of grain

**FARMERS CAN INCREASE CORN PROFITS
THOUT CONTRIBUTING TO SURPLUSES**

Excellent Production Practices

FERTILIZER 459,000 TONS
137,700,000 BUSHELS
600 LBS./A
PROD. COST $0.75/BU.
PROFIT $96,849,000

Average Production Practices

FERTILIZER 441,400 TONS
176,550,000 BUSHELS
250 LBS./A
PROD. COST $1.11/BU.
PROFIT $60,380,000

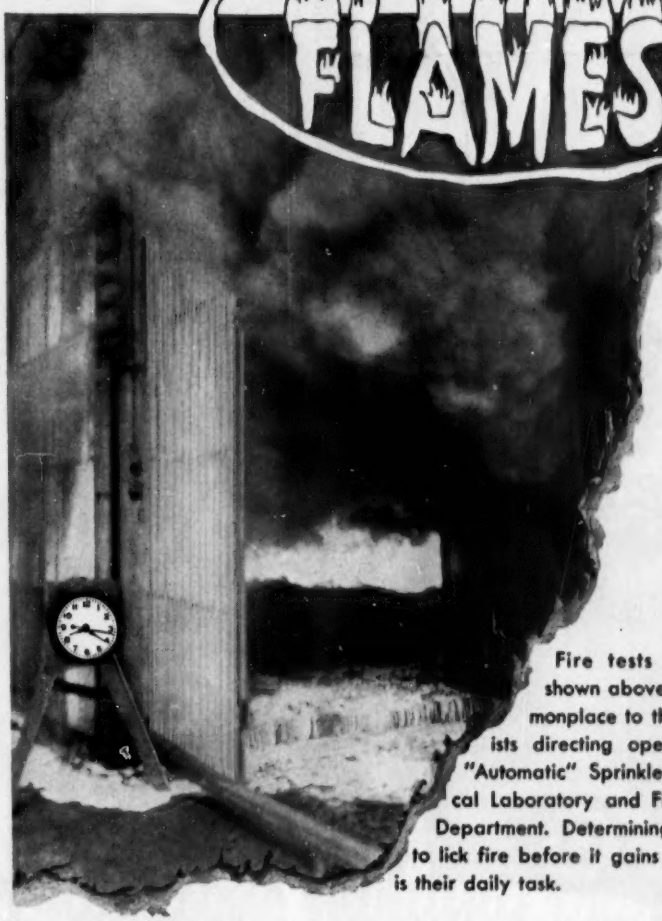
PREPARED BY THE DEPARTMENTS OF AGRONOMY, AGRICULTURAL ECONOMICS AND SOCIOLOGY, O.S.U. THE NATIONAL FERTILIZER ASSOCIATION COOPERATING

Reply to Farmers

possible to cut acreage and production, yet boost over-all profits. The trick? Slash costs by using high fertilization on a limited acreage. Supplementing its leaflets, the NFA is providing county agents and salesmen with slides and notebooks.

Killing FIRE Through Research

OPERATION FLAMES



Fire tests like that shown above are commonplace to the specialists directing operations at "Automatic" Sprinkler's Technical Laboratory and Fire Testing Department. Determining methods to lick fire before it gains headway, is their daily task.

These engineers design fire protection BEST-BY-TEST for severely hazardous manufacturing operations. All types of extinguishing mediums are at their disposal—every known method of fire detection is employed.

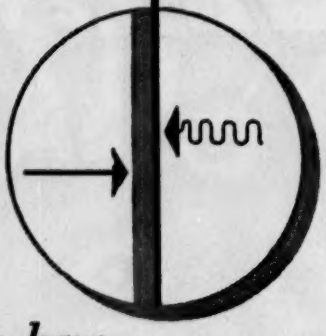
The services of this research phase of our business are available to our customers and potential customers. It's a service second to none in our field—lends credence to the motto . . . "Automatic" Sprinkler—FIRST IN FIRE PROTECTION!

"Automatic" Sprinkler
CORPORATION OF AMERICA
YOUNGSTOWN, OHIO

Offices in Principal Cities of North and South America

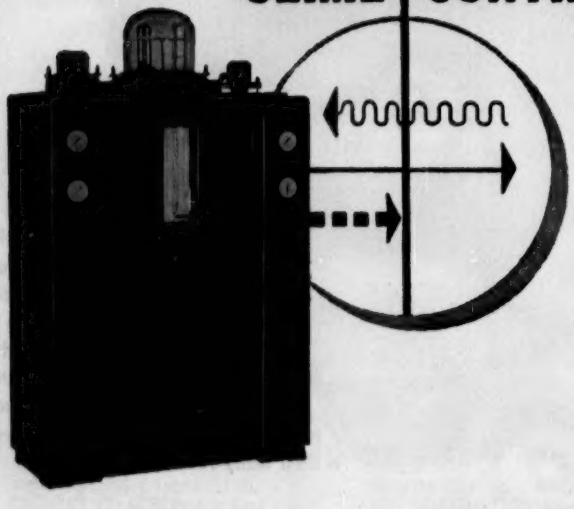
Where you need

HEAT | EXCHANGE



Be sure you have

SLIME | CONTROL



Whether you heat or cool water for make-up, process or any other use, you will need Wallace & Tiernan Chlorination to help combat slime problems introduced by water-borne bacteria or air-borne bacteria.

With slime control equipment designed for any need, built for lasting and dependable service, highly accurate and backed by over 40 years of successful application experience, Wallace & Tiernan Chlorination can help you increase the efficiency of your plant and cut operating costs. For further information write our Industrial Division.

WALLACE & TIERNAN

25 MAIN ST., BELLEVILLE 9, N. J.

CHLORINATORS • CHEMICAL FEEDERS • SCREENING EQUIPMENT • MAGNETIC SEPARATORS • PRECISION PRESSURE INSTRUMENTS • CATHODIC PROTECTION • FINE CHEMICALS

CD-39

P&G's BERNI: Sales-minded offices render more than support.

Orders in the Office

Lighting a fire under every aspect of chemical selling today, competition is stimulating more than just the salesman on the road or his harassed sales manager. Its demanding pace is prodding packaging and transport (*CW, Oct. 30, p. 44*), its call for efficiency and teamwork is stirring the staid office routine (*CW, Aug. 28, p. 56*).

Only recently, further evidence of this redoubled effort in the chemical sales office came out of the American Management Assn.'s annual office management conference held in New York (Oct. 20-22). The evidence presented: Procter & Gamble's "sales-minded office"; Du Pont's adoption of integrated data processing.

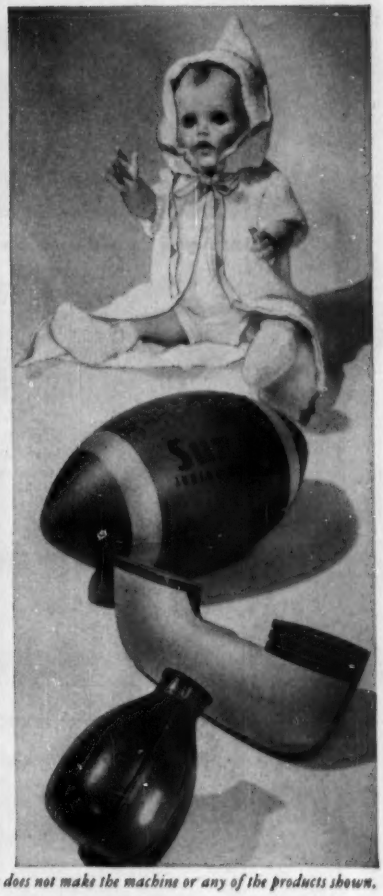
"A good sales-minded office," P&G's district office Service Manager I. J. Berni told the session-goers, "should contribute . . . to the sales function in a positive manner." It must, "perform . . . so that the best service is rendered . . . merchandise delivered as required, and every customer contact has as its objective the building of fine customer relations."

Also, the office must make "every effort" to relieve sales people from much work not directly related to selling "so the sales force can concentrate on its real function—selling."

One way the office can contribute to sales success, says Berni, "is to strive for lower costs, so that sales management will be in a better competitive position." Citing reports and statistics as an example, the P&G official indicated that they are expensive, their need and effectiveness constantly subject to question. The office should

Another new development using

B. F. Goodrich Chemical *raw materials*



B. F. Goodrich Chemical Company does not make the machine or any of the products shown.

Geon stars in continuous molding process

THIS automatic machine molds industrial items or toys in a continuous process—an operation based on the versatile properties of Geon polyvinyl paste resin.

Molds fed with Geon paste resin move on a continuous chain, passing through an oven to fuse the material. Items come out of the molds perfectly formed, ready for finishing.

Automobile arm rests, dolls or toy footballs are but a few of the many products economically made from Geon paste resin. If this suggests an idea for a new product, get in touch with us for help.

There's a whole family of Geon polyvinyl materials that make sales-successes from dolls to upholstery, rust-and-acid-proof rigid piping, and top grade electrical insulation. Helpful technical information is yours for the asking. Please write Dept. E-13, B. F. Goodrich Chemical Company, Rose Building, Cleveland 15, Ohio. Cable address Goodchemco. In Canada: Kitchener, Ontario.

GEON RESINS • GOOD-RITE PLASTICIZERS . . . the ideal team to make products easier, better and more saleable.

GEON polyvinyl materials • HYCAR American rubber • GOOD-RITE chemicals and plasticizers • HARMON colors

A Seaboard medium size barge enroute from Detroit to New York on the Barge Canal.

let us show you how we can effect substantial savings in transporting your liquid chemicals and vegetable oils

Atlantic Seaboard
New York Harbor
N.Y. State Canals
Great Lakes
Gulf of Mexico

Seaboard operates a modern fleet of tank barges expertly handled.

SEABOARD SHIPPING CORPORATION
17 Battery Place
New York 4, N. Y.
TEL. WHitehall 4-5715

LOOK TO **metso®** **anhydrous...**
FOR FULL **SiO_2** BENEFIT

Metso Anhydrous is the "anhydrous" with the true metasilicate ratio. It is high in silica (SiO_2)—low in CO_2 impurity. The balanced properties of alkali and soluble silica, long recognized for superior performance in hydrated metasilicate are sure when you choose Metso Anhydrous, Sodium Metasilicate.

You get more also because Metso Anhydrous' sizing is controlled to minimize dusting, and solubility is fast and complete.

Ask for sample bottle to confirm these benefits from Metso Anhydrous.

PHILADELPHIA QUARTZ COMPANY
1150 Public Ledger Bldg. Philadelphia 6, Pa.

metso® detergents
PQ® SOLUBLE SILICATES

DISTRIBUTION. . . .

resist introducing any new report until satisfied it can be justified.

It's a requisite for the sales-minded office to have a sales-minded staff. To be sales-minded, the office worker must recognize that everything he does influences a customer, that he must persistently ask himself, "Will that which I am doing now help sell one more item?" And, he should always be looking for information or leads that will help a salesman write, increase, or save an order.

This attitude, Berni claims, has produced results. One illustration: a P&G credit man went over his files, singled out accounts buying in quantities far short of their ability to pay. Relayed to the salesmen, this information eventually led to larger orders than the particular dealers had ever purchased before. And the dealers obtained the quantity discounts.

How does a company add the office to the sales team? At P&G, the method used relies heavily on "properly trained and indoctrinated supervisors acting as liaison between the office and field forces." Company supervisors train at the factory and warehouse, alongside the salesmen on his rounds, and with the truckmen in making deliveries. Particular emphasis is placed on letter writing and treatment of phone calls. All letters are reviewed regularly, Berni asserts, to assure reflection of the sales-minded attitude. And, to encourage prompt order handling, P&G requires customer-service clerks to report uncompleted rather than finished work each day.

Mechanized Selling: If the current interest is any indication, the sales office will handle a good deal of its work mechanically. Describing Du Pont's installation of integrated data processing, James Wilson, management engineer, termed it "the most dramatic development in office procedures in years."

The system, which records constant sales order information on a punched tape, enables much of a sales order to be prepared mechanically, and turns out (automatically) invoicing and sales-analysis tapes. Du Pont's experience so far with the system, reports Wilson, has been an improvement in customer service, and trimmed inventories. Another advantage: a complete sales and inventory picture can be obtained quickly.

It's more than likely that today's competitive conditions would spur any efficiency move. And, it's more than likely, too, that competitive conditions notwithstanding, the advantages of IDP and the sales-alert office help would be too attractive for many a chemical company to ignore.

TRITON X-100 Proves Superior in Cleaning Brass and Steel

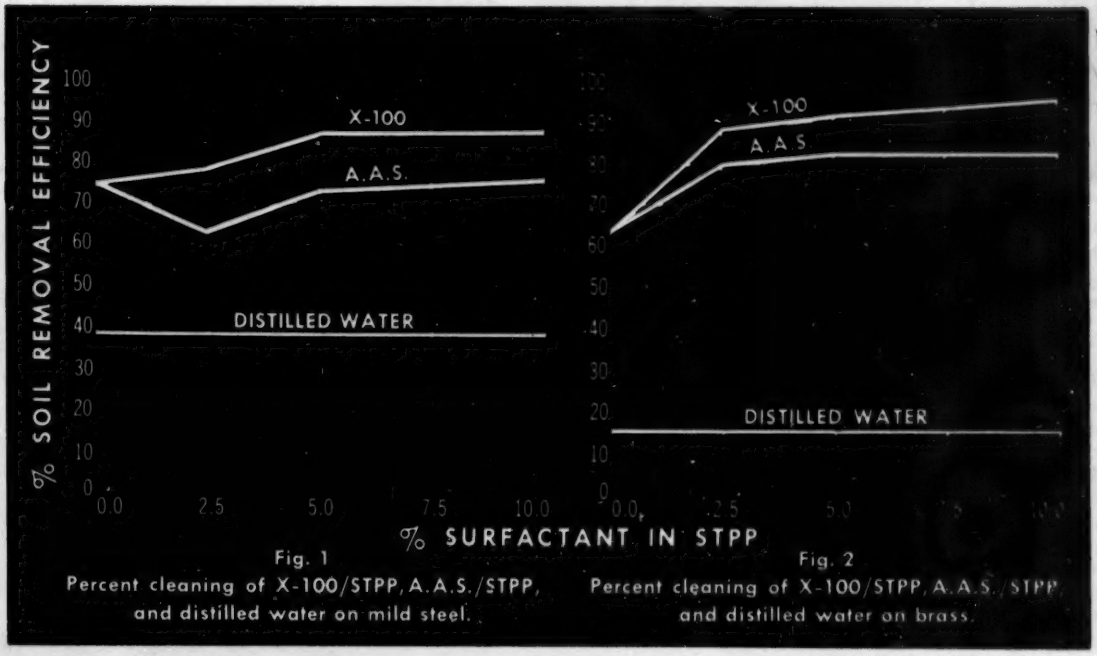


Fig. 1
Percent cleaning of X-100/STPP, A.A.S./STPP, and distilled water on mild steel.

Fig. 2
Percent cleaning of X-100/STPP, A.A.S./STPP and distilled water on brass.

• In the research laboratories of Rohm & Haas hard surface detergency tests were performed on a number of metals using a large variety of cleaners. Cleaning agents used were TRITON X-100, sodium tripolyphosphate, an alkyl-aryl sulfonate, and, for comparison, distilled water.

The above charts show the typical behavior of blends of a surfactant and an alkaline builder on brass and mild steel. When as little as 2½% or 5% TRITON X-100 was added to sodium tripolyphosphate, detersive action on both metals was found to be superior to that obtained with comparable blends of STPP and a commercial alkyl-aryl sulfonate.

A blend of 2½% TRITON X-100 and 97½% STPP was found to be a better cleaner than one containing 10% aryl sulfonate and 90% STPP. This is a striking example of the superior performance and economy which can be obtained with TRITON X-100.

WRITE US FOR SAMPLES AND PRICES

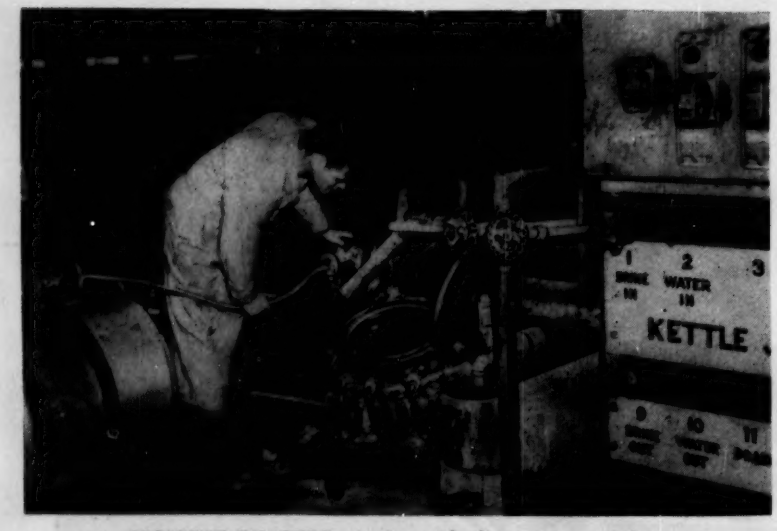
CHEMICALS FOR INDUSTRY

ROHM & HAAS COMPANY

WASHINGTON SQUARE, PHILADELPHIA 5, PA.

Representatives in principal foreign countries

TRITON is a trade-mark, Reg. U. S. Pat. Off. and in principal foreign countries.



PIGMENT REACTOR: At Imperial, they count on colors.

Having It Both Ways

With a chance for a "breather" now that the heavy home decorating season is over in most areas of the country, Imperial Paper & Color Corp. (Glens Falls, N.Y.) is taking stock. As a key supplier of pigments for paints, Imperial is savoring the boom in latex and alkyd interior paints. As a major producer of premium wallpapers, it's looking with pride at the substantial sales of its newest item, a prepasted, pretrimmed wallpaper.*

Imperial's dual interests in home decorating products—paints and wallpaper—give it an unusual but indirect position as a specialties maker. In one case, it is a supplier, providing the pigments vital to the coatings industry. In another case, it draws heavily on the specialties field—paper chemicals, inks and adhesives—for the key elements of its success. And no matter which product becomes the favorite in home decorating, Imperial stands to gain.

Prepasted Push: Thus, while the company—and the industry—admits that wallpaper sales are not as healthy as they might be, it doesn't see the picture as all dark. It readily admits that slumping interest in wallpaper was a prime reason for its big push behind its prepasted paper.

Where paper has fallen, paints have gained. And at Imperial, as a partial result, the Color Division has become the "tail that wags the dog." Now, about 850 employees are turning out pigments, compared with 600 making wallpaper. And pigment output now goes mainly to paints; breakdown shows about half the production to paints, one-fourth to inks, and the rest into industries such as rubber, plastics, textiles, linoleum.

The firm's leadership* in the $100-million/year pigment business has undoubtedly contributed to its top position in wallpaper; it flatly guarantees the colors on its paper against fading for three years.

Bound to Batches: At its 70-acre plant in Glens Falls, Imperial still does most of its pigment production in batches, as it did when it was formed in 1907. It makes only a few of the hundreds of colors in its catalogs by a continuous process, although the company would prefer to design any new plants with continuous production in view.

A typical problem imposed by the batch production: despite careful control work, off-standard batches sometimes result. These can be made into salable colors by blending with a purposely made, counterbalancing "off" batch. But the storage of these "bad" batches poses an inventory problem, and it is doing all it can to reduce the number of substandard batches.

In batch or continuous operation, Imperial has one big goal—to make the pigment particles finer. Toward this aim, it was one of the first pigment makers to utilize the electron microscope in research and production. It currently has a laboratory staff of over 100—including 40 graduate chemists—at work on control and research.

Household Help: Advanced as a countermeasure to the easily applied home paints is Imperial's prepasted and trimmed wallpaper. To make this product acceptable for the market, it worked out special adhesives (early products of this sort lost much of their glue in the water) and paper strong enough to take the tugs of amateur paper hangers.

In addition, it has had to overcome considerable customer resistance—many a householder felt he could paint, but was afraid to tangle with wallpaper.

Color Division, of course, sells pigments to other manufacturers of wallpaper, but it feels that in the complex job of turning out the paper (*see cut*) its combined operations give it an edge on its competitors.

And naturally, too, though it has a strong interest in paints, Imperial will continue this active promotion of wallpaper. But whether paints or papers gain the upper hand in home decoration, it will undoubtedly profit.

PATTERNMAKER: Combining skill with color sense for wallpaper manufacture.

* Its net sales of pigments and wallpaper last year were approximately $22 million, and sales this year look as good.

* It advertises itself as the world's largest producer of chemical pigment colors. It is not a manufacturer of black or white pigments, however, and prefers not to regard them as colors.

Intermediates

by TRUBEK

The listed intermediates reflect over twenty years of experience in the development and production of organic chemicals. You will be pleased by our uniform, controlled quality and dependable deliveries.

We also invite your inquiries for commercial quantities of other fine organics. Among them, too, may be some you have been making for your own use but would prefer to buy, if you can do so with confidence. An energetic, resourceful research, engineering and production team welcomes the opportunity to work with you.

Manufacturers of

ACETALDEHYDE AMMONIA
ACETOPHENONE TECH.
ACETYL CHLORIDE
ANISIC ALDEHYDE
ANISOIN
ANISYL CHLORIDE
BENZHYDROL
BENZHYDRYL CHLORIDE
BENZOPHENONE TECH.
BENZYL ALCOHOL TECH.
BENZYL CYANIDE
n CAPROIC ACID
DIPHENYL METHANE
ETHYL FORMATE
ETHYL MALONIC ESTER
ETHYL PHENYLACETATE
ISOVALERIC ACID
METHYL PHENYLACETATE
PALMITOYL CHLORIDE
PHENYLACETAMIDE
PHENYLACETIC ACID
PHENYLACETONE
beta PHENYLETHYLAMINE
PHENYL PROPYL CHLORIDE
POTASSIUM PHENYLACETATE
PROPIONYL CHLORIDE
PROPIOPHENONE
SODIUM PHENYLACETATE
n VALERIC ACID

and Other Intermediates

INTERMEDIATES DIVISION

THE TRUBEK LABORATORIES

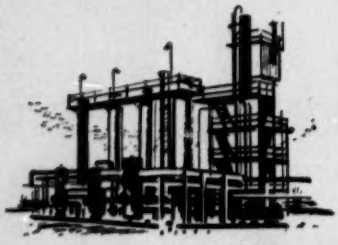
INCORPORATED

ESTABLISHED 1932

East Rutherford, New Jersey

problem

To meet ethylene consumer demand for a product that is essentially free of acetylene.



solution

GIRDLER developed catalysts to selectively hydrogenate the acetylene in the presence of the ethylene. Acetylene content was cut more than 99% giving consumers what they wanted:

Ethylene with less than 50ppm of Acetylene

Girdler will gladly help solve *your* catalyst problems.

FOR

Catalysts

WRITE...

The

GIRDLER

Company

A DIVISION OF
NATIONAL CYLINDER GAS COMPANY
Gas Processes Division
LOUISVILLE 1, KENTUCKY
NEW YORK • TULSA • SAN FRANCISCO

Update on an Amine

Just about as proud of Scientific Oil Compounding Co.'s new Copper Cunimene as its inventor is Hercules Powder Co. For while the novel antifungal agent is an effective addition to Scientific's line of preservatives, it means another valuable derivative based on Hercules' Rosin Amine D.

Introduced about eight years ago, Rosin Amine D and its derivatives have caught on well—the original plant has been outgrown, and early this year Hercules put into operation a $1-million plant in Hattiesburg, Miss. Now, with that plant in smooth production, it's opening a brisk new campaign to find more outlets for RAD, and it looks to specialties makers for those markets.

A high-molecular-weight nitrogen compound based on rosin, Rosin Amine D is a cationic surface-active agent. Besides the products developed by others, Hercules has itself made a number of other derivatives of RAD: the acetate (RADA), several fatty acid salts, and, more recently, a group of 10 ethylene oxide adducts it tags Polyrads. Polyrads have been particularly successful; they now make up a large part of the output of the Hattiesburg plant.

So far, most developments with these amine products have been along three lines—biocidal activity, surface activity, and corrosion inhibition:

- Besides Copper Cunimene, the copper complex worked out by Scientific Oil, RADA has been used successfully as a preservative. It is generally used to protect protein solutions, such as go into wallpaper coating compositions. Another form, the pentachlorophenol salt, is now sold by some 10 formulators for preserving cellulosic materials; its major limitation is that exposure to sunlight destroys its activity (unless protected by a vinyl or rubber coating).
- Several makers of industrial cleaning compounds have taken advantage of Polyrad's ability to inhibit hydrochloric acid—it can be used in toilet bowl cleaners, etc. Similarly, it is used as an inhibitor in oil well acidizers, and in pumping wells to protect tubing and casing.

Hercules is currently courting oil refiners: it is selling its Polyrad as an inhibitor for corrosive hydrocarbons. Injected directly into refinery lines, it lowers corrosion in condensers, reboilers, and fractionating columns.

- Surface activity of RADA has accounted for some applications, too. It is used as a flotation agent in the separation of silica from feldspar and phosphate ores. It prevents separation of asphalt and gravel under wet conditions when it is used as an "anti-stripping" agent in cutback (thinned) asphalt paving materials.

In the manufacture of paints and inks, RAD serves as wetting and dispersing agent, and for pigment flushing. Polyrad and RADA have been used as textile wetting agents.

These are only a few of the many uses for RAD and its derivatives developed so far. Their variety illustrates again the way cationics get the offbeat jobs (*CW, Oct. 9, p. 74*), and Hercules hopes they're signposts for applications yet to come.

Limit on Lead

Paintmakers got a new regulation to follow, and city health departments a matter for study, with New York City's ruling last week that paint sold there must carry a warning label if its lead content is more than 1%.

The edict, which is designed to eliminate lead as a pigment (the term "one per cent" will still permit incorporation of lead driers), specifically applies to paints that are not clearly labeled as exterior coatings. The rule is in the form of an amendment to the city's Sanitary Code.

Purpose of the regulation is to reduce the hazards associated with unknowing use of lead-containing paints. Since 1950, the health department says, some 49 deaths have resulted from lead poisoning. The fatalities, all children, apparently came about when the children nibbled repainted surfaces (from home-painted furniture or toys).

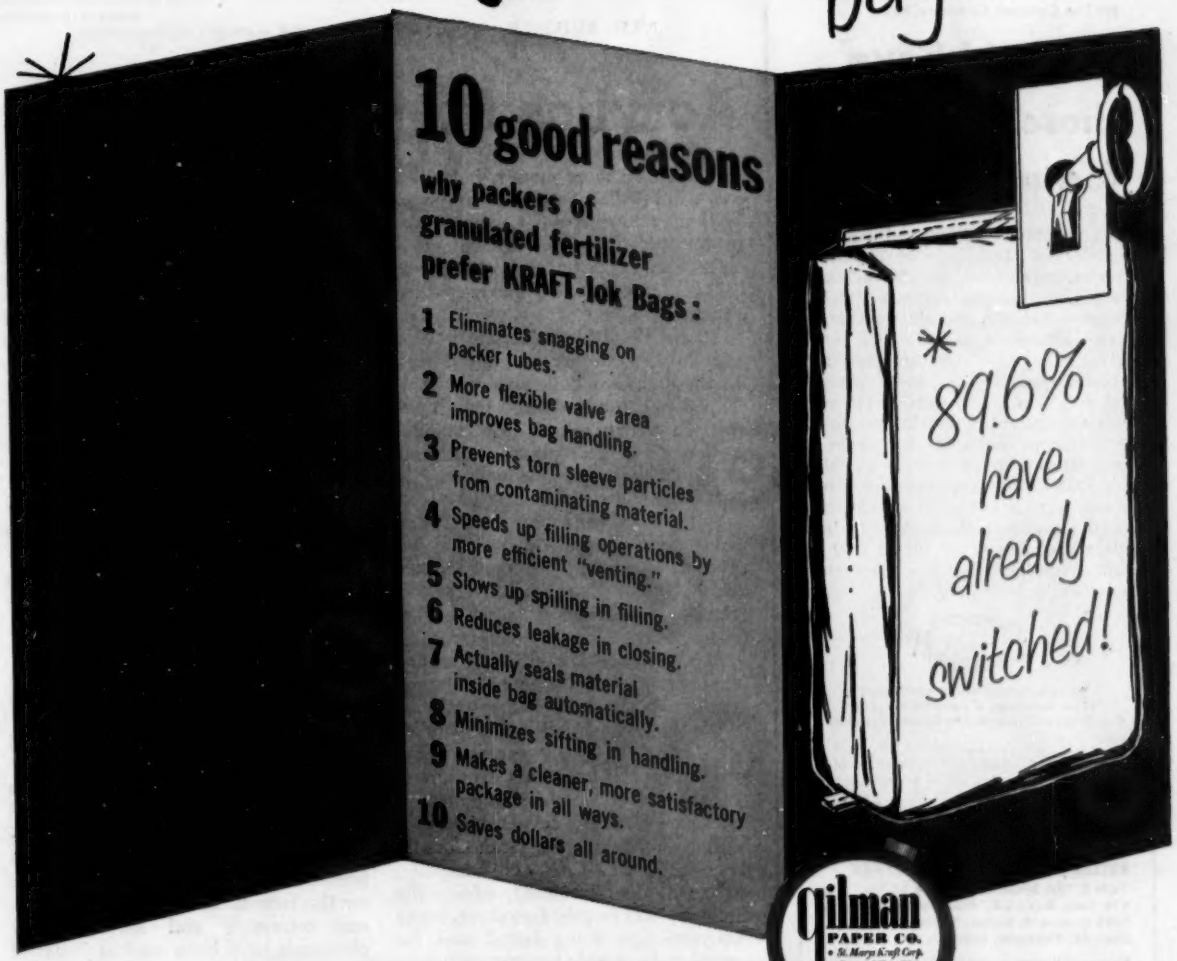
The paint industry has until next May 1 to comply with the regulation—either relabel or reformulate to reduce lead content. Richard Eckart of the National Paint, Varnish and Lacquer Assn., an industry representative attending the department meeting when the ruling was made, pointed out that already many paints do not contain lead, and that manufacturers will seek ways to further curb its use.

Guidepost: Although the ruling is strictly a local matter now, New York's health department says it hopes the regulation will be a model for other cities and states.

For complete details on the Sanitary Code amendment, paint manufacturers should contact Jerome Trichter, assistant commissioner, New York City Board of Health, Room 316, 125 Worth St., New York, N.Y.

GOING GRANULAR?

switch to KRAFT-lok® bags!


10 good reasons
why packers of granulated fertilizer prefer KRAFT-lok Bags:
1 Eliminates snagging on packer tubes.
2 More flexible valve area improves bag handling.
3 Prevents torn sleeve particles from contaminating material.
4 Speeds up filling operations by more efficient "venting."
5 Slows up spilling in filling.
6 Reduces leakage in closing.
7 Actually seals material inside bag automatically.
8 Minimizes sifting in handling.
9 Makes a cleaner, more satisfactory package in all ways.
10 Saves dollars all around.
* 89.6% have already switched!

Gilman PAPER CO.
• St. Marys Kraft Corp.
• Gummed Tape Div.
• The Celluseal Corp.
• Kraft Bag Corp.

KRAFT BAG CORPORATION

Gilman Paper Company Subsidiary

630 Fifth Avenue, New York 20, N. Y. • Daily News Bldg., Chicago 6, Ill.

1 Responsibility
2 Integrated Plants
3 Generations of Bag Experience

If management could design a business building

Butler buildings cover 185,000 square feet of space—at dramatically low cost, for The Coleman Company, Inc.

it would have these BUTLER features

If management could redesign the "shirtsleeves" buildings of business—factories, warehouses, outlets—everyone would agree that high costs are the first problem—cost of materials, erection, expansion, alteration, maintenance. Butler steel buildings have already solved these problems—and several more besides. Steel and aluminum need little care. Steel clear-span frames make every cubic foot of interior usable. Bolted assembly makes erection quick and easy. Bolted apron walls make expansion or alteration economical. Mass production produces buildings to high quality standards—for about the price you'd pay for cheapest construction. For proof—mail coupon today.

BUTLER

Manufacturers of Oil Equipment
Steel Buildings • Farm Equipment
Dry Cleaners Equipment • Special Products

Factories at:
Kansas City, Mo. • Galesburg, Ill. • Minneapolis, Minn.
Richmond, Calif. • Houston, Texas • Birmingham, Ala.

For prompt reply address office nearest you.
BUTLER MANUFACTURING COMPANY
7459 E. 13th Street, Kansas City 26, Mo.
959 Sixth Ave., S.E., Minneapolis 14, Minn.
1089 Avenue W, Ensley, Birmingham, Ala.
Dept. 59, Richmond, Calif.

Please mail more information on Butler steel buildings.

Name_____

Firm_____

City_____ State_____

AMERICAN HAIRDRESSER

NAIL BUILDER: Acrylics add glamor and strength to fingernails.

Acrylics for the Cuticle

It'll cost men more money, but a new treatment (called Patti-Nail) for fingernails may be just what women have been looking for. The treatment, based on an acrylic plastic, aims at repairing broken nails, and making them stronger.*

To do the job, an acrylic powder and liquid hardener are mixed right on the nail, and built up over a nail-shaped foil to any desired length (*see cut*). In a few minutes the material hardens to a clear plastic, firmly adhering to the natural nail. It may be filed, buffed or polished.

Some of the claims for Patti-Nail: it makes long fingernails practical because of its strength; it protects "unhealthy" nails that tend to crack or splinter; it provides a better surface for applying polish.

The treatment is said to last around two months, depending on the natural growth of the nail. While ordinary polish and some polish removers do not affect Patti-Nail, wearers are advised to keep it from long exposure to volatile solvents, such as acetone.

Chance Hit: The inventor of Patti-Nail, Tom Slack at American Consolidated Dental Co. (Philadelphia), makers of dental cement, admits the discovery was largely fortuitous. Some two years ago, doing dental work for a patient, he decided to try an acrylic dental cement on her broken fingernail, about which she had complained. It worked well, and when his secretary's friend, Patti Still, learned of the procedure, she saw what a boon it might be for women.

While Slack worked out details of the process, and applied for patents, Miss Still formed Patricia Still Laboratories (Norberth, Pa.) to sell the idea to beauty salons. Currently, beauty parlors are the only places where the treatment is available, but home use kits will likely be put on the market.

*Less than a month ago, Sak's Fifth Avenue introduced the treatment, charged $16.50 for all 10 fingers.

Heptachlor Stabilizer

An "antibreakdown" agent to prevent decomposition of an insecticide by its carrier has been developed by Velsicol Corp. (Chicago) for use with heptachlor dust and granular formulations.

The company claims that the product is more efficient, more economical, easier to use than previous stabilizers, hopes it will up use of heptachlor.

According to Velsicol, many types of clay commonly used as carriers and diluents for organic insecticides are active catalysts that decompose heptachlor and certain other chlorinated hydrocarbon insecticides. To prevent this decomposition and stabilize the formulation, urea, hexamethylene tetramine and several other chemicals have been used as "catalyst deactivators."

Velsicol says its product is a new-type "deactivator." While the company won't specify its chemical composition, it does say a patent application has been filed.

Have you all the facts on

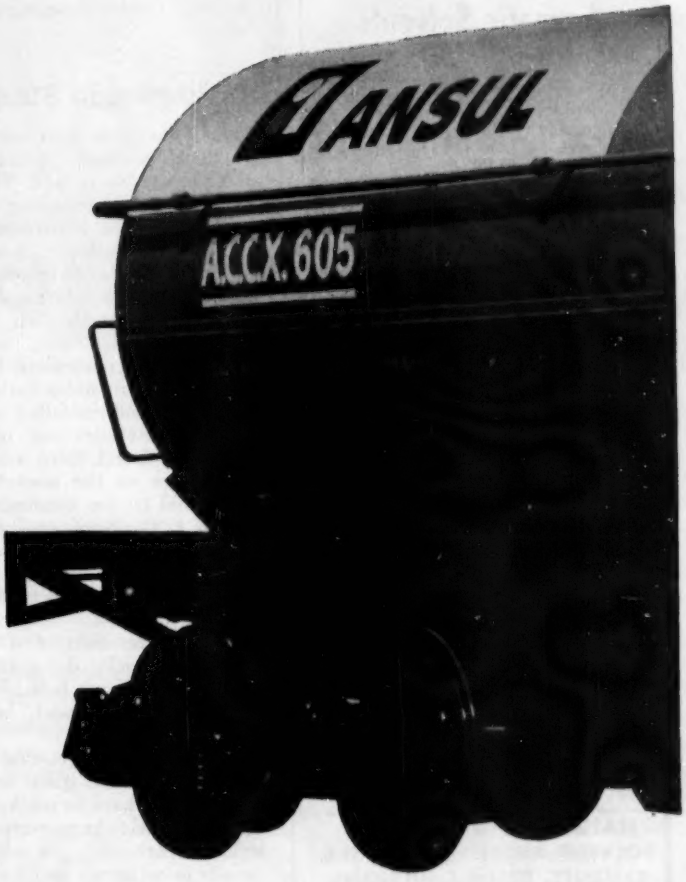
methyl chloride

as a methylating agent

Problems relating to the methylation of organic compounds have been a specialty of the Ansul Chemical Company since 1936.

Ansul's 18 years of methyl chloride experience is available to help you do a more efficient methylating job at your plant, *or* to actually methylate a compound for you and ship the finished product to a point of your choice.

Ansul methyl chloride is available for immediate shipment in any quantities from laboratory cylinders to tank car lots. For complete information write, ANSUL CHEMICAL COMPANY, Industrial Chemicals Division, Dept. C-12, Marinette, Wisconsin.



product purity
personalized service
research facilities

ANSUL

AROMATIC SOLVENTS

Benzol

Toluol

Xylol

Super Hi-Flash Naptha

"Amsco-Solv"*

Aromatic Solvents

*Trade Mark

THE CP CHEMICAL SOLVENTS INCORPORATED

60 PARK PLACE NEWARK 2 N J
WOrth 2-7763 MArket 2-3650

QUALITY CONTROLLED
INDUSTRIAL ADHESIVES
by HADLEY'S

. . . GIVE SUPERIOR RESULTS

CEMENTS FOR BONDING . . .
FOIL TO FOIL
PAPER TO FOIL
PAPER TO POLYETHYLENE
POLYETHYLENE TO CLOTH
CLOTH TO CLOTH
CLOTH TO LEATHER
LEATHER TO LEATHER
LEATHER TO RUBBER
RUBBER TO RUBBER
RUBBER TO METAL

SPECIAL HADLEY ADHESIVES . . .
. . . THAT RESIST WATER, OIL AND HEAT
SPECIAL HADLEY ADHESIVES SERVING VARIED INDUSTRY
PAPER
MULTI-WALL BAG
LEATHER
RUBBER

also . . .

NATURAL AND SYNTHETIC SOLVENT RUBBER AND LATEX CEMENTS, RESIN EMULSIONS

"IF IT STICKS IT'S HADLEY'S"

WHAT ARE YOUR PROBLEMS? WRITE OR PHONE US DIRECT

HADLEY BROS. · UHL CO.
514 CALVARY AVE · ST. LOUIS 15, MO

BLOCK: Mildew's making a specialties market.

Mildewcide Stumpers

One of the wide open markets in the chemical specialties field lies in mildew inhibitors. So says S. S. Block, Dept. of Chemical Engineering, University of Florida, who is currently working on them for the Army.

The big bait, as he sees it: 25 million households. That's the number in localities where mildew is prevalent. (They're chiefly along the nation's coastlines, and particularly bad in most of the Southern states during the season of frequent rainfalls.)

In his investigations on mildew, Block has found there are plenty of preventives on the market. Most of those sold to the consuming public, for use in the home are based on dehumidifiers, he reports—e.g., silica gel, alumina, calcium chloride. In his estimation, none of these actually prevents mildew.*

He sees products of a fungicidal nature eventually doing the job the dehumidifiers have failed to do. Besides taking this stand, he's of the opinion that:

- An aerosol mildewcide should be developed. Unlike space insecticides, its spray will have to reach every part of the material to be protected. Reason: mildew spores stay put while insects usually move from a spot the spray did not reach to one where it did.
- There's a real need for products to treat mattresses. Treatment of stuffing must be done before manufacture of the mattress, because "little can be done once the mattress has been assembled."
- Paint manufacturers should find out more about the strength of mildewcide required for consistent results.

Block would also like shoe manufacturers to look into the possibility of pretreating shoes with mildewcides. Shoe polishes and leather dressings should likewise be pretreated, he says. In every case, there is opportunity for specialties makers.

* His experiments with household mildewcides led him to develop an electric shoe rack for use in closets on the proved theory that heat is effective against mildew formation. As yet, no one has come along to manufacture the device.

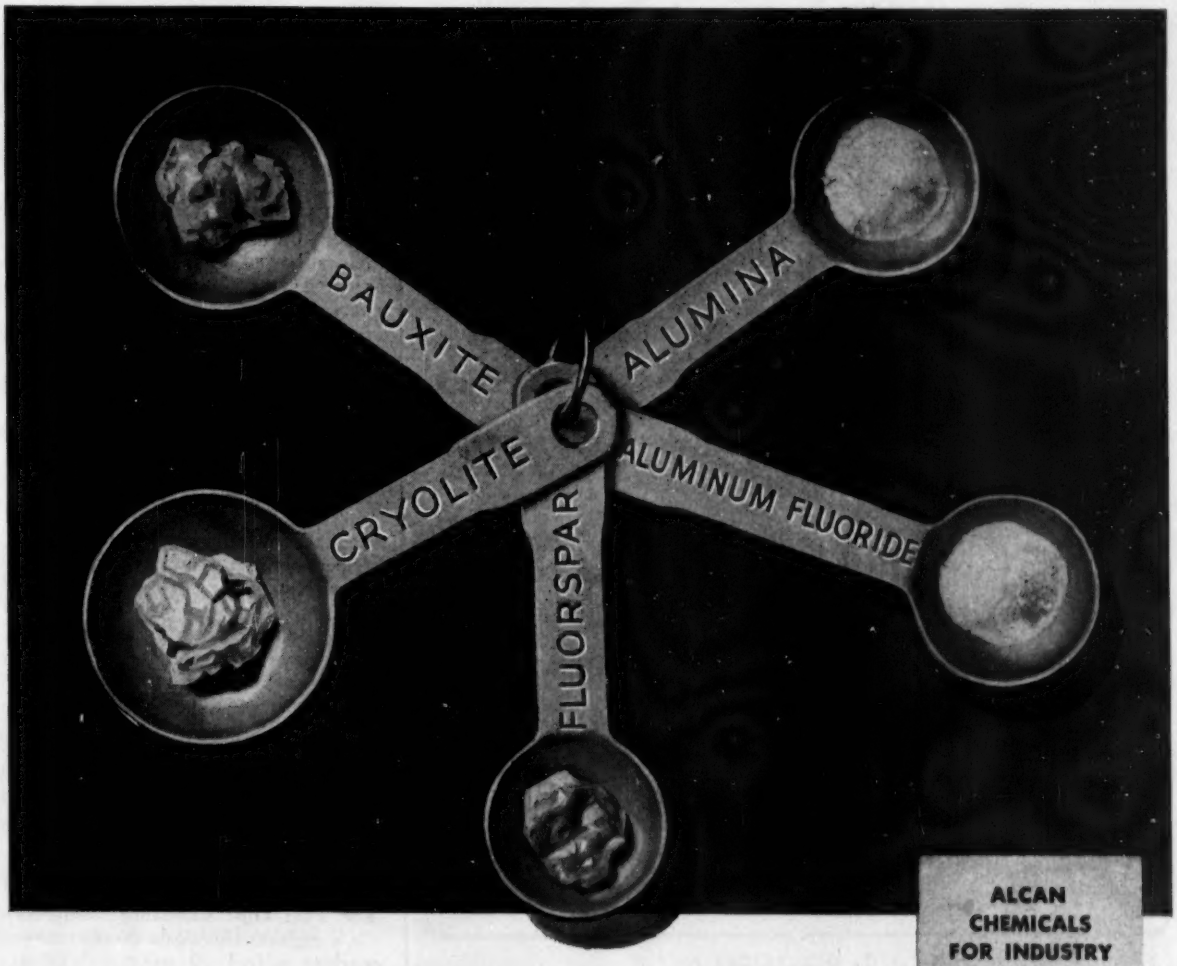
Better Waste

Adhesives makers got a pat on the back recently from the Waste Paper Utilization Council and the Government Printing Office. The WPUC seconded the Printing Office's new publication,* which points out the value of alkali-soluble adhesives for making books, pads, business forms and the like—the big plus being that they enhance the value of the scrap cuttings as salvage.

The bulletin singled out two products for particular commendation: National Adhesive's finished glue, Resyn 60R-3132, and Shawinigan's Gelva C-3 (suitable for making acceptable alkali-soluble adhesives). GPO's technical director, Morris Kantrowitz, emphasized that these glues are not competitive with the hot-melt, high-speed adhesives used for pocket-size books, and other high-volume publications. He also said that his list is just a starter—his group is seeking other adhesives to try, and would wel-

* GPO-PIA Joint Research Bulletin B-4 supplement on Miscellaneous Adhesives.

BOOK TRIMMING: For more useful scrap, alkali-dispersible adhesives.



In the recipe

for an ingot of aluminum . . .

go many chemicals including those shown here. As one of North America's great producers of aluminum, Alcan (Aluminum Company of Canada, Ltd.) must be sure their chemicals are right. You may depend on Alcan chemicals for your use, too. Co-operating in their production are Alcan's sister companies. Each of these affiliates specializes in its own field of endeavor:

- **Laboratory research and the exploring and surveying of material resources throughout the free world;**
- **Mining and processing of raw materials in many different countries;**
- **Development of up-to-date shipping methods for the protection and speedy delivery of the products.**

One of Alcan's sister companies, Aluminium Limited Sales, Inc., distributes Alcan Chemicals in the United States. The office near you will be glad to help you with your special chemical requirements.

ALCAN CHEMICALS FOR INDUSTRY

Alumina, Activated
Alumina, Calcined
Alumina Hydrate
Aluminum Chloride, Anhydrous
Aluminum Fluoride
Aluminum Sulphate
Bauxite
Chlorine, Liquid
Cryolite, Artificial
Fluorspar
Lime
Magnesia
Magnesium Chloride, Anhydrous
Sodium Fluoride
Sulphuric Acid

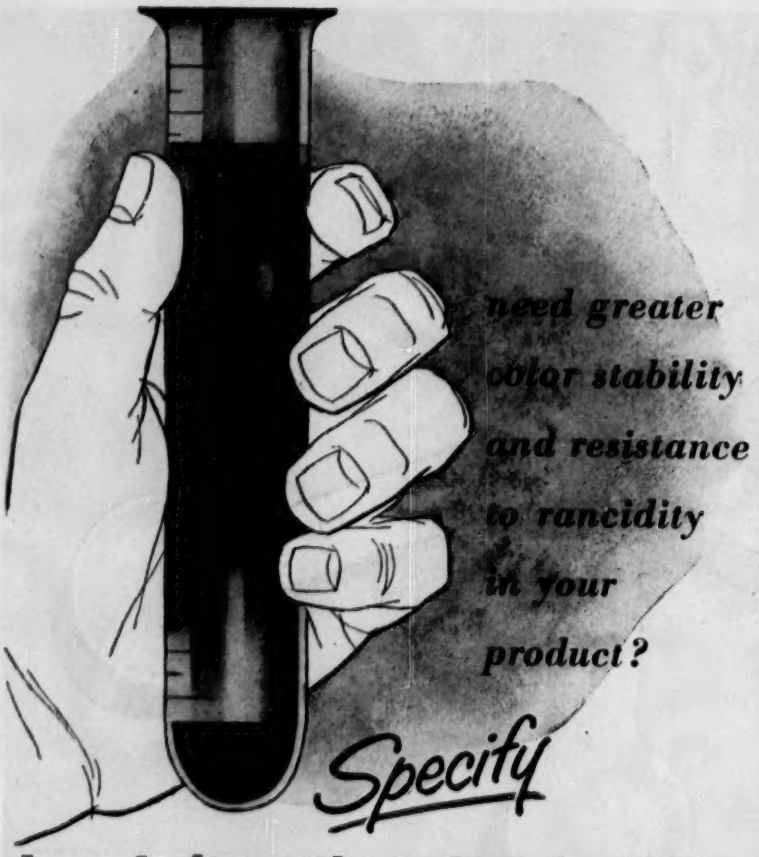
ALCAN Aluminum Chemicals

ALUMINIUM LIMITED SALES, INC.

One of the ALUMINIUM LIMITED group of Companies

Offices or Agents in 40 cities
Cable: ALIMPORT

630 Fifth Avenue, New York 20
20 North Wacker Drive, Chicago 6
422 Terminal Tower, Cleveland 13
2842 West Grand Boulevard, Detroit 2
611 Wilshire Boulevard, Los Angeles 17



Low Iodine Chemifats by ADM

HYDROFOL GLYCERIDES T-57-N
HYDROFOL GLYCERIDES T-57-L
HYDROFOL FATTY ACIDS 410
HYDROFOL FATTY ACIDS 420
ADOL FATTY ALCOHOLS 52

ALL 1.0 MAX. IODINE VALUE

Compare samples of any one of these ADM extra-low iodine content "Chemifats" with similar fat chemicals. You'll find these HYDROFOLS measure up to your greatest expectations in the preparation of products which demand maximum color stability and resistance to oxidation.

Send for full particulars on these as well as the full line of ADM Chemicals from fats. Write for the new 40-page HYDROFOL CATALOG.

Hydrofol

ACIDS • GLYCERIDES • SPERM OILS • ALCOHOLS

FROM VEGETABLE • ANIMAL • MARINE OILS and FATS

PRODUCED IN ANY QUANTITY — SAMPLES TO SHIPLOADS

Other ADM Products:
Linseed Oil, Soybean Oil, Fish Oil, Paint Vehicles, Vinyl Plasticizers, Foundry Binders, Industrial Cereals, Vegetable Proteins, Wheat Flour, Dehydrated Alfalfa Meal, Livestock and Poultry Feeds

ARCHER • DANIELS • MIDLAND COMPANY
Chemical Products Division • 2191 West 110th St. • Cleveland 2, Ohio

SPECIALTIES . . . .

come samples by interested manufacturers.

Key to the advantage of the adhesives, the Waste Paper Council says, is that the binder can be easily removed by using the standard, alkaline deinking solutions. Heretofore, minute specks of adhesive resin on repulped paper showed up as hard-to-print, unwanted spots on the paper. Paper mills have hesitated to reuse such cellulose scrap. (Printers using the holt-melt adhesives faced a similar problem, too, but it also has been solved with alkali-soluble glues.)

The recommended glues are based on polyvinyl acetate copolymer emulsions. They are cold-setting, and said to be fast-drying and unaffected by moisture and heat. The GPO has switched over entirely to the alkali-dispersible types—and without additional cost.

•

Designed for Winter: The Monroe Co. (Cleveland) has introduced a new liquid coating that, it says, makes possible the winter repair and resurfacing of roofs. Known as Winter Grade Wet Surface Rufferseal, it is reputed to flow readily at temperatures 15 to 20 degrees colder than products ordinarily employed. Application can be made while the roof is wet.

•

For Fuel Oils: Monsanto Chemical Co.'s organic chemicals division now markets a fuel oil color stabilizing agent designed to prevent color degradation and sediment formation. A concentration of 25 lbs. of the product—Santolene J—per 1000 bbls. of fuel oil is a normal dosage for most base fuels, Monsanto says.

•

New Name: Thurmond Industries, Inc. (Los Angeles) has taken the new corporate name of C. U. McClellan Laboratories, Corp. The company makes and sells veterinary chemicals and household insecticides.

•

Pair: National Aniline Division, Allied Chemical & Dye Corp., has brought out two new nondusting sulfur dyes. Sulfur Brown CGCF, which produces —on cotton and rayon—shades of reddish tan, is suitable for coloring materials that are to be rubberized. Sulfur Direct Blue N is employed in the production of economical navy shades on cotton materials, especially corduroy.

•

High-Temperature Silicone: Dow Corning Corp. has come up with a new glass-filled silicone compound for molding high temperature plastic parts. Dubbed Dow Corning 301

"Today's tire manufacturers are using bonding agents* that literally *weld* the cords to the rubber"

says C. H. Peterson, President
U. S. Rubber Reclaiming Co., Inc., N. Y.

Mr. Peterson standing in front of the massive reclaiming equipment at the U. S. Rubber Reclaiming Co., Inc., plant in Cheektowaga, New York. At the left is a bale of reclaimed tire fabric, and at the right a pallet load of reclaimed rubber.

"THIS positive bonding has caused us one headache after another," adds Mr. Peterson. "The *better* the bond between the rubber and the tire fabric, the *tougher* our job becomes."

U.S. Rubber Reclaiming Co., Inc., has been forced to redesign its separation system time and again to cope with the constantly improved tires. Better grinding equipment has had to be developed to tear the stubborn fabric from the rubber. The power of the grinders, which was originally 150 h.p., has been increased steadily until it is now up to 450 h.p.

Although a "headache" to the U.S. Rubber Reclaiming Co., Inc., the toughness of today's tires is a definite advantage to the motorist.

The rolling mill, commonly known as the "cracker." These powerful rolls actually tear the tires to pieces.

* A good deal of the credit for permanent rubber-fiber bonds in tires can be claimed by Koppers Resorcinol. Resins made from resorcinol form an excellent bond—one that will take repeated pounding and wear, will withstand prolonged flexure under grueling service conditions without separating. Because of their superb adhesive properties, resins made from Koppers Resorcinol have also found wide application in the manufacture of industrial belting, hose, and many other heavy-duty rubber products where a powerful, lasting bond is needed between reinforcing fibers and synthetic or natural rubber.

For further information, write to:

KOPPERS COMPANY, INC.
CHEMICAL DIVISION, DEPT. CW-11134 PITTSBURGH 19, PENNSYLVANIA

KOPPERS ® **Koppers Resorcinol**

SALES OFFICES: NEW YORK · BOSTON · PHILADELPHIA
ATLANTA · CHICAGO · DETROIT · LOS ANGELES

the new

PERMA KLEER®...

a type for every purpose

80
the all-purpose sequestering agent

SP
specific for iron

OH
specific for iron in caustic

these powerful *new organic* sequestrants are setting *new standards* in chelating

- **IRON**
- **CALCIUM**
- **MAGNESIUM**

we also manufacture EDTA -in the name of PERMA-KLEER-50 . . . as specialists in the development of sequestering agents, we suggest you send for our latest revised booklet explaining testing methods and comparisons, pages 30-31-32 Make your own tests!

Refined PRODUCTS
CORPORATION
Manufacturing Chemists
630 SCHUYLER AVENUE
LYNDHURST • NEW JERSEY

SPECIALTIES

Molding Compound, it's reported to produce parts that can be pulled hot without cooling the mold. Properly molded parts will withstand continuous exposure to 450 F, the maker says.

•

Vinyl and Others: Flexible foamed vinyl and other plastic foam products for industrial applications are now being offered by Crest Chemical Industries (Brooklyn) under the name Crestfoam.

•

Bulletins: Emery Industries, Inc. (Chicago) has published a descriptive booklet on its antistatic fiber lubricant, Twitchell 7421.

• Emulsol Corp. (Chicago) has released a new edition of its formulator's manual of emulsifiable insecticidal concentrations.

• Carbide and Carbon Chemicals Co. has published a 13-p. booklet on the company's "newer developments in textile chemicals."

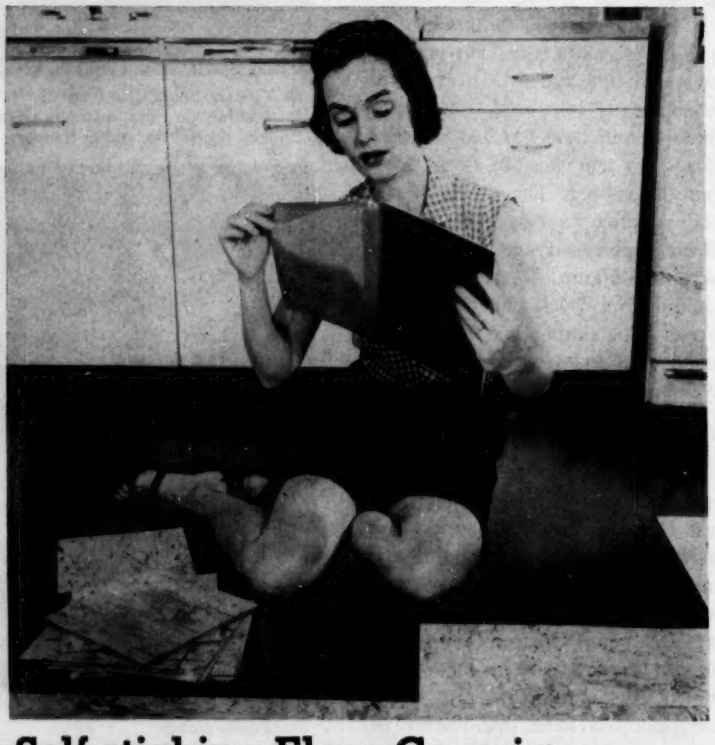
• Eltex Corp. (Providence, R.I.) offers a new folder describing its process to protect irons and steels with a black oxide finish.

•

Nontoxic Disinfectant: Midwest Products Co. (Kansas City, Mo.) has developed a new disinfectant called Uni-San PC 20. It will go on sale early next year.

•

Tell-Tale Paint: A feature at the National Chemical Exposition held in Chicago recently was a tell-tale paint developed in the Naval Research Laboratory, Washington, D.C., to indicate when gun barrels are getting too hot for safety. The color changes when the maximum temperatures are being approached. It's the opinion of Navy



Self-sticking Floor Covering

ADHESIVE MAKERS have come through with another twist to simplify floor tiling. On new vinyl tiles to be marketed soon by Robbins Floor Products, Inc. (Tuscombia, Ala.), a special adhesive is factory-applied. To use, the tiler simply strips off a thin, adhesive-protecting plastic sheet, and fits the tile onto the floor.

The new tile skirts a couple of drawbacks to do-it-yourself tile laying: the messy job of spreading the adhesive, and the possibility of "sticker" squeezing up between tiles.

Whatever your GLASS PACKAGING problem . . .

GET *Ball* ON THE LINE!

BALL, a leading source of supply for glass containers and metal closures, can provide practical help on your packaging problems as well. And you can get this help through ONE source—our Technical Service Department.

Whether it's a problem of container design, specifications, performance on the line, processing or even a plant layout, Ball Technical Service can help you find the right answer.

For the finest in glass containers, metal closures, and technical know-how—call BALL first of all.

BALL BROTHERS COMPANY

Offices in All Principal Cities

LET US SEND YOU "The Doorway to Packaging Facts," with interesting details of the many tests that maintain Ball carton quality and economy. Address Ball Brothers Co., Dept. CW 11, Munice, Ind.

CALL BALL FOR QUALITY GLASS CONTAINERS, METAL CLOSURES, PACKAGING ENGINEERING SERVICE

Plants at: Muncie, Indiana • Chicago, Illinois (Closure Division) • Hillsboro, Illinois • Okmulgee, Oklahoma • El Monte, California

SODIUM BICARBONATE, U.S.P.

Specialized Grain Sizes

•

MONOHYDRATE of SODA

•

SAL SODA

•

Technical Service

CHURCH & DWIGHT CO., Inc.

70 Pine Street **New York 5, N.Y.**

Phone Digby 4-2181

Barg-ing?

for performance...
for meeting schedules...
for unusual jobs...
for a realistic price...

Get Dixie's bid!

Complete Inland Waterways bulk service—Petroleum and Chemical Products—also common carrier New Orleans West.

Call or Write

DIXIE CARRIERS INC.

THE DC MODERN FLEET

HOUSTON
203 Fidelity Bank Bldg.
CH-3543

NEW ORLEANS
1422 Nat'l Bank Commerce
MA-6631

PETROLATUMS
WHITE OILS
SULFONATES

REFINERIES AT
• GRETNA, LA.
• KARNS CITY, PA.

• WAREHOUSE STOCKS IN PRINCIPAL CITIES

SHERWOOD
REFINING COMPANY, Inc.
Englewood, New Jersey

SPECIALTIES . . . .

researchers that such a coating may have use by industry on surfaces hard to reach with conventional temperature indicators. The Navy is willing to pass the formula for the paints on to industrial users.

•

Combined Facilities: Ceramco Inc. (Newark, N.J.), manufacturing chemists, and Bennett Steel Treating Company (also Newark) have combined facilities to formulate ceramic coatings for metals.

•

Bristle Sterilizer: Gallowhur Chemical Corp. (New York) has developed a process that, it claims, renders nylon and animal brush bristles antiseptic. It involves the use of a solution of an organic mercury compound. Preliminary studies indicate toothbrushes can be treated at a cost of less than 1¢/brush, Gallowhur says.

•

Industrial Cleaner: The Whistlclean Corp. (New York) is now marketing an emulsifying-type industrial cleaner for the purging of fat, oil and grease. Name: Petroclean D-25.

•

Breathful Cure: Merck & Co., Inc. has developed a new formulation—Vetstrep Spray—for treating a chronic respiratory disease of chickens (CRD, air sac disease). The product comes in a 12-oz. aerosol that sprays the antibiotic dihydrostreptomycin for the chickens to inhale. One container treats 100 birds in 30 seconds for about 2¾¢/bird. A single spraying is usually sufficient to curb the disease, the maker says.

•

Four-Way Attack: Lederle Laboratories Division, American Cyanamid Co., has brought out Targot ointment, which it says is the first preparation to offer a four-way attack on bovine mastitis by combining Aureomycin chlortetracycline, neomycin, dihydrostreptomycin and penicillin. Because it's in an oil base that is not soluble in milk, the product is not lost during milking, it is claimed.

•

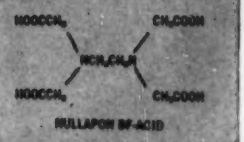
Expansion: National Laboratories Inc. (Toledo, O.) has just completed a $125,000 expansion program that increased both production and office space. Part of the expansion stems from the company's adding a new industrial floor wax to its line of chemical specialties.

• Crompton & Knowles Loom Works (Worcester, Mass.) has purchased Althouse Chemical Co. (Reading, Pa.), which does an annual volume of $3 million in dyes and other chemicals for the textile finishing trade.

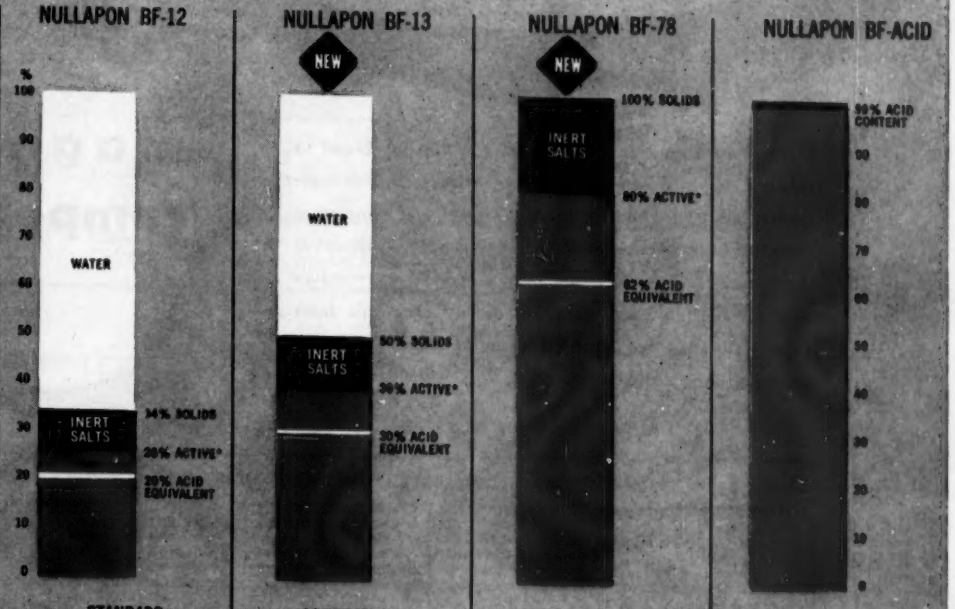
ANTARA
gaf

NULLAPONS®

are outstanding sequestering or chelating agents capable of controlling, by deionization, undesirable di- or tri-valent metal ions in aqueous solution



NULLAPON BF-ACID



	STANDARD LIQUID	CONCENTRATED LIQUID	DUSTLESS FLAKES	TECH. PURE ACID. POWDER
Active* Principal	Tetra Sodium Ethylene-diamine Tetraacetate 25-27%	Tetra Sodium Ethylene-diamine Tetraacetate 38-40%	Tetra Sodium Ethylene-diamine Tetraacetate 78-80%	Ethylenediamine Tetraacetic acid (Tech. Pure) 99%
Physical Form Density	Clear Liquid 1.2 (10#/gal)	Clear Liquid 1.3 (11#/gal)	Non-hygroscopic Flake .6 (5#/gal)	Powder .7 (6#/gal)
Molecular Weight of Active Ing.	380	380	380	292
100 Parts of Nullapon Controls	6.7 parts $CaCO_3$	10.0 parts $CaCO_3$	20.0 parts $CaCO_3$	33.5 parts $CaCO_3$ when used in alkaline solutions
or . . . 1 oz. by weight in ten gallons of water controls	49 PPM $CaCO_3$	73 PPM $CaCO_3$	146 PPM $CaCO_3$	245 PPM $CaCO_3$ when used in alkaline solutions
STANDARD PACKING	500 lb. Drum 50 lb. Drum 10 lb. Drum	500 lb. Drum 50 lb. Drum 10 lb. Drum	200 lb. Drum 25 lb. Drum 5 lb. Drum	250 lb. Drum 25 lb. Drum 5 lb. Drum

ANTARA. CHEMICALS

A SALES DIVISION OF

GENERAL ANILINE & FILM CORPORATION

435 HUDSON STREET • NEW YORK 14, N. Y.

SALES OFFICES: NEW YORK • BOSTON • PROVIDENCE • PHILADELPHIA CHARLOTTE, N. C. • CHATTANOOGA • CHICAGO • PORTLAND, ORE. • SAN FRANCISCO

IN CANADA: CHEMICAL DEVELOPMENTS OF CANADA, LIMITED, MONTREAL

"From Research to Reality"

ANTARA CHEMICALS
435 Hudson St., New York 13

Please send me a sample of and literature on Nullapons.

NAME_____

TITLE_____

COMPANY_____

ADDRESS_____

RELIABLE SOURCE

magnesia compounds

From pharmaceuticals to fertilizers and building board to rubber, Magnesia compounds serve industry as fillers, extenders, adsorptive and conditioning agents, and many other uses. Michigan's brine wells are a superlative source of these useful compounds. Michigan Chemical Corporation now in its 20th year producing quality chemicals from these wells, can be depended upon to supply you with your magnesia requirements.

TYPICAL ANALYSES OF MICHIGAN MAGNESIA COMPOUNDS

	No. 1 Calcined Magnesite	No. 5 Calcined Magnesite	No. 15 Calcined Magnesite	No. 30C Light Calcined Magnesia	No. 40 Extra Lt. Calcined Magnesia	Basic Magnesium Carbonate	(NF Grade) Magnesium Hydroxide	(Tech. Grade) Magnesium Hydroxide
Bulk density, weight per cubic foot	60 lb.	28 lb.	24 lb.	8½ lb.	5 lb.	5.5 lb.	15 to 25 lb.	app. 20 lb.
Ignition loss:	0.5%	1.5%	2.5%	1.9%	3.0%	56.5%	PASSES N. F. IX SPECIFICATIONS	31.4%
Chloride (as CL):	0.08	0.1	0.2	0.25	0.25	0.2		
Analysis, ignited basis:						NOT IGNITED		NOT IGNITED
SiO_2	0.3	0.3	0.3	0.3	0.3	0.15		0.20
Fe_2O_3	0.2	0.2	0.2	0.2	0.2	0.08		0.15
AL_2O_3	0.2	0.2	0.2	0.2	0.2	0.08		0.15
CaO	1.0	1.0	1.0	1.0	1.0	0.7		0.7
Mn				0.01	0.01	0.00		
Free Moisture						1.5		2.0
Screen test: Through 200 mesh		95%		99.9%	99.9%	99.99%	99.0%	99.0%
Screen test: Through 325 mesh			99.5%	99.5%	99.5%	99.5%		

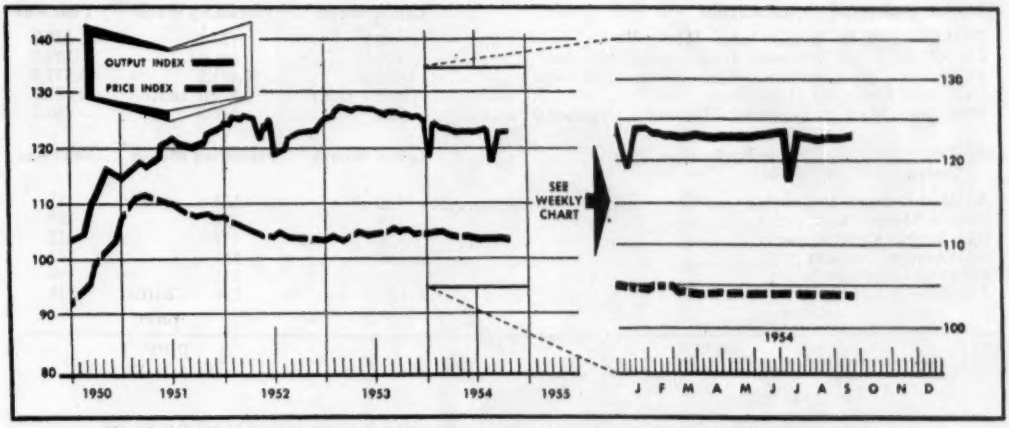
We will be glad to provide further information on these Magnesia compounds, or to send you a Michigan Chemical Catalog containing technical data and other information on Michigan Chemical products.

MICHIGAN CHEMICAL CORPORATION Saint Louis, Michigan

EASTERN SALES OFFICE:
230 Park Avenue
New York 17, New York

BASIC MANUFACTURER OF INDUSTRIAL, PHARMACEUTICAL AND AGRICULTURAL CHEMICALS

MARKETS . . . . . .



CW Index of Chemical Output—Basis: Total Man Hours Worked in Selected Chemical Industries
CW Price Index—Basis: Weekly Prices of Sixteen Selected Chemicals

MARKET LETTER

Basic economic nudgers—better demand, higher manufacturing costs—are behind the sudden hikes in both technical and powdered synthetic camphor schedules now being posted by major producer Du Pont. Codistributors of its USP powdered material (McKesson & Robbins and Chas. L. Huisking) simultaneously advanced prices by 5¢/lb. Du Pont's technical grade is up 3¢/lb.

Spot customers are paying the higher tariffs immediately, but contract buyers have until Nov. 15 to pick up what they need at the old tags. New prices on the synthetic powdered camphor range from 59-61¢/lb., depending on quantities.

Synthetic camphor tablets, currently selling for 85-87¢ (again the price is determined by the amounts bought), aren't being boosted yet, but its a safe bet that Huisking, the sole U.S. manufacturer, is readying some changes.

•

On the other hand, tetraethyl lead buyers are paying less again. Within hours late last week prime producers Ethyl and Du Pont were quoting reduced prices—the third time this year.

The most recent competition-spurred cuts are the result of the hot scramble now going on to line up contract customers. The prices posted by the two firms appear widely divergent but the explanation lies in the fact that each uses a different basis—TEL content by Ethyl, antiknock compound by Du Pont. The changes: Ethyl's motor mix is cut from 61.3¢/lb. down to 59.69¢; its aviation mix is down to 65.59¢/lb. from a previous 67.2¢.

Du Pont's compounds are reduced about a 1¢/lb.—motor mix to 36.70¢ and aviation to 40.28¢/lb.

•

Dollars, not pennies, measure still another Du Pont price alteration. As of now the firm's purified silicon (a mineral used in solar batteries and electronic devices), is pegged at $380/lb. That's a $50/lb slash. Behind the lower price: expansion of production facilities.

The purified material is finding increasing outlets, via the elec-

MARKET LETTER

WEEKLY BUSINESS INDICATORS	Latest Week	Preceding Week	Year Ago
CHEMICAL WEEK Output Index (1947=100)	123.9	123.7	125.7
CHEMICAL WEEK Wholesale Price Index (1947=100)	104.3	104.4	105.1
Bituminous Coal Production (daily average, 1,000 tons)	1,500.0	1,481.0	1,517.0
Steel Ingot Production (1,000 tons)	1,842.0 (est.)	1,822.0 (act.)	2,081.0
Stock Price Index of 13 Chemical Companies (Standard & Poor's Corp.)	331.7	326.9	260.2

MONTHLY INDICATORS—Production (Index 1947-49=100)	Latest Month	Preceding Month	Year Ago
All Manufacturing and Mining	126	124	135
Durable Manufactures	134	132	151
Non-durable Manufactures	121	117	122
All Chemical Products	143	139	142
Industrial Chemicals	153	151	156
Petroleum & Coal Prod.	126	124	133

The nickel market is still in a strapped condition. Consumers of all forms—including salts, oxides and the metal—43 are finding it almost as difficult to get all they want today as it was back in the early part of the year. This despite slackening defense and atomic energy siphoning since then. Continued brisk government stock-pile buying, of course, is the chief factor behind the unbalanced supply/demand situation.

The present tight civilian picture is doubly highlighted: by one major distributor's adhering to an allocation system for its metal-plating customers; by the premium prices now being quoted for several nickel salts by some resellers.

•

On the other hand, it appears Washington will keep hands off as far as underwriting construction of nitrogen storage facilities is concerned. Informed sources in the nation's capital believe that Business Defense Services Administration recommendations *(CW, Nov. 6, p. 77)* against setting an expansion goal will be accepted by the Office of Defense Mobilization. Their reasoning: if ODM were going to allow fast tax write-offs, it would have done so before.

•

Another agency's nod will likely open a lucrative market for diethylstilbestrol. The Food & Drug Administration has approved its use in feed supplements for cattle.

Eli Lilly has an FDA okay for a feed premix containing the hormone, said to increase average cattle weight gain by about 19%, cut feed costs some 11%.

•

But that agricultural chemicals are in for "tough-sell" times, at least for the next couple of years or so *(CW, Oct. 23, p. 4)*, seems amply substantiated this week: trade talk has it that one big-time producer will soon shelve all ag chemical activity, concentrate on its basic product-derived line.

SELECTED CHEMICAL MARKET PRICE CHANGES—Week Ending November 8, 1954

UP

	Change	New Price		Change	New Price
Camphor, syn., USP, 2,000 lbs. or more	$0.05	$0.59	Gum rosin, NY., Betsy to Mary, cwt.	$0.10	$8.85
Camphor tech., 1 bbl. or more	0.03	0.52	Wood rosin, f.o.b., South, Nancy, cwt.	0.10	7.85

All prices per pound unless quantity is stated.

CORROSION ARRESTED!

Here, at Tuscola, Illinois—site of the great National Petro-Chemicals Corporation installation—corrosion is a serious problem.

In the manufacture of ethyl alcohol from ethylene, sulfuric acid is used. To combat the corrosive action of acid in the two large towers shown above... one a saturation absorber, the other a cleanup absorber . . . Graver provided definite safeguards. For example, the very "joints" of each of the towers were lined with special alloy strips. This is an exacting, difficult job, requiring unusual knowledge.

Graver's ability to fabricate alloy, stainless, clad, and other hard-to-work materials is exceptional, resulting from long experience and constant research. Where *your* problem is especially difficult and superior craftsmanship is a *must*...call on Graver!

GRAVER ... *specialists in the fabrication of towers, tanks, pressure vessels*

GRAVER TANK & MFG. CO., INC.

East Chicago, Indiana

CHICAGO • NEW YORK • PHILADELPHIA • EDGE MOOR, DEL. • ATLANTA • CATASAUQUA, PA. • PITTSBURGH • CLEVELAND
DETROIT • TULSA • SAND SPRINGS, OKLA. • HOUSTON • ODESSA, TEXAS • CASPER, WYO. • LOS ANGELES • FONTANA, CAL.
SAN FRANCISCO

EVERFLEX EMULSIONS

(Dewey and Almy vinyl acetate copolymer emulsions)

ARE INTERNALLY PLASTICIZED

These copolymers have INHERENT flexibility—do NOT require use of chemical plasticizers

For Coatings, Textile Sizes, Adhesives

DAREX Everflex A

the first of a series of new vinyl acetate copolymer emulsions with unique new properties and compatibilities. Their films are marked by an *inherent* flexibility and softness usually found only in synthetic rubber type latices. Because this flexibility is independent of the presence of a separate plasticizer, Everflex films cannot become embrittled by plasticizer loss due to evaporation, migration, or extraction. The Everflex series is closely related to polyvinyl acetate emulsions, possessing similar qualities of chemical stability, permanent clarity, freedom from yellowing, non-oxidizing, and non-aging. Everflex A dries to a firm, tough film with applications in the fields of coatings, textile sizes, and adhesives.

Emulsion Properties	
Total Solids, %	54-56
Viscosity, cps.	1000-1200
pH	4.0-6.5
Film Properties	
Tensile Strength (lbs/in.^{2})	2000-2200
Color	Water-White
Light Stability	Excellent
Aging	Excellent
Gloss	High
Melting Range	Above 390°F

For use as above, but with even greater flexibility

DAREX Everflex B

this new vinyl acetate copolymer emulsion produces an internally plasticized film which is softer and more flexible than Everflex A, but is otherwise similar in properties. Everflex B will be of interest where a more flexible film or a softer hand is required than can be obtained with Everflex A.

Emulsion Properties	
Total Solids, %	54-56
Viscosity, cps.	1000-1200
pH	4.0-6.5
Film Properties	
Tensile Strength (lbs/in.^{2})	1000-1300
Color	Water-White
Light Stability	Excellent
Aging	Excellent
Gloss	High
Melting Range	Above 390°F

For superior water-based paints

DAREX Everflex G

here is a new vinyl acetate copolymer emulsion that is specially designed as a vehicle for water-based paints. Everflex G exhibits superior water resistance, good pigment wetting properties, and excellent film formation even at low temperatures. Like the others in this series, internally plasticized Everflex G is non-aging, non-discoloring, and retains flexibility. Its use is suggested for interior finishes, primers, and exterior masonry paints.

Emulsion Properties	
Total Solids, %	50-52
Viscosity, cps.	300-500
pH	4.0-6.5
Film Properties	
Tensile Strength (lbs/in.^{2})	2000-2200
Color	Water-White
Light Stability	Excellent
Aging	Excellent
Gloss	High
Melting Range	Above 390°F

DEWEY and ALMY
Chemical Company
Cambridge 40, Mass.

Sales offices: 62 Whittemore Ave., Cambridge 40, Mass.
6050 W. 51st St., Chicago 38, Illinois

West Coast: — Martin, Hoyt & Milne, Inc.
Los Angeles • San Francisco • Seattle • Portland

DEWEY AND ALMY *Organic Chemicals*

DAXAD DISPERSING AGENTS
DAREX POLYVINYL ACETATE EMULSIONS
DAREX EVERFLEX EMULSIONS
DAREX COPOLYMER LATICES
DAREX COPOLYMER RESINS
DAREX PLASTICIZERS

U.S. Production—Principal Vitamins

VITAMIN	ANNUAL OUTPUT		
Water-soluble: (1000 kg.)	1951	1952	1953
Niacin, niacinamide	724	963	859
C (ascorbic acid)	704	637	758
B_1 (thiamin hydrochloride)	122	102	126
B_2 (riboflavin, 100% basis)	111	107	121
Oil-soluble: (trillion USP units)			
A	67.2	73.3	106.9
D_2	26.0	26.4	25.8
D_3	23.0	22.6	24.2

Production of the various vitamins, of course is influenced by consumption. In a revision last year, the Food and Nutrition Board, National Research Council, recommended these daily dietary allowances for the maintenance of good nutrition of healthy adults: niacin or niacinamide, 10-16 mg.; C, 70-75 mg.; B_1, 1.0-1.6 mg.; B_2, 1.4-1.6 mg.; A, 5000 USP units. Therapeutic capsules might contain approximately five times daily allowances.

Imports Truncate Vitamin Peak

This week, vitamin makers are convinced that recent price reductions (CW Market Letter, Oct. 2) in ascorbic acid (C)—down from $21 to $16/kg.—and thiamine hydrochloride (B_1)—down from $135 to $100/kg.—are perking sales noticeably.

On the other hand, some worries, particularly about imports of these vitamins from countries having low-cost labor, have as yet not dissipated. But that main concern may be eased if an upcoming government action returns the vitamins to an earlier tariff classification. Present duty under paragraph 34 of the existing tariff act is only 5% ad valorem. Vitamin manufacturers recall that when imports were under paragraph 5, the duty was a protective 25%, although it was later cut to 12½%.

The tariff walls concern a good many U.S. organic chemical makers. In this group are vitamins, now big business, both in packaged form and in bulk sales for food fortification and animal feed supplementation. Despite the influx of foreign vitamins and lower prices this year, the total value of domestic bulk sales should, by year's end, be within a $75-80-million range. That's about the same as the $77.8 million last year, which was a healthy near-14% higher figure than '52's output, and some 5% above the peak-'51 Korean War year total. Compared with 1950, last year's total had leaped ahead by 33% (*see table*).

Value of Domestic Sales of Bulk Vitamins
(*million dollars*)

	Cyclic*	Acyclic*	Total
1950	43.0	15.7	58.7
1951	56.8	17.7	74.5
1952	48.9	15.1	64.0
1953	59.2	18.6	77.8

*Includes under the cyclic heading vitamins A, B_1, B_2, B_6, D_2, D_3, niacin, various derivatives, and other minor vitamins; under the acyclic heading, vitamins B_4, C, and derivatives.

From Bulk to Dose: When the manufacturers convert these bulk vitamins into various tablets, capsules and other forms and dress them up in standard dosages, the dollar volume of sales just about triples that of the bulk sales—and last year dosage was over the one-quarter-billion-dollar level. Expectations are that '54's volume will top this by 2-3%.

Approximately 60% of the dollar volume is in health-maintenance dosage sales; the remainder is in high-potency (therapeutic) vitamin concentrate sales.

The dollar sales* of the health-maintenance classification fed chiefly into three market areas (in millions):

	'53	'52	% change
Drug stores	102.1	101.3	+0.7
Other retail outlets	30.4	27.7	+9.7
Hospitals	3.3	3.4	−0.6
Total	135.7	132.4	+2.6

*Source of retail sales data: *Drug Trade News.*

LITHIUM

. . . the Miracle Element

THE "OPEN-SESAME" OF THE CPI

Lithium presents properties that are stimulating to scientists, researchers and development engineers—properties that open the door to possibilities in countless fields. Lithium could well pave the way to some amazing—and profitable—developments in *your* industry. It may pay *you* to investigate this wonder element. Take a long look at lithium for *your* production process. Send for Data Sheets on any of the products mentioned here.

LITHIUM METAL
Metal (Six forms)
Hydride
Amide
LITHIUM SALTS
Bromide
Chloride
Carbonate
Sulphate
Nitrate
Hydroxide

SPECIAL LITHIUM COMPOUNDS
Aluminate
(Meta) Borate
Cobaltite
Manganite
Molybdate
Silicate
Titanate
Zirconate
Zirconium Silicate

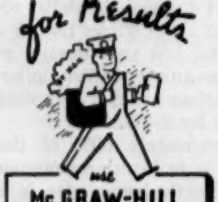
. . . trends ahead in industrial applications for Lithium.

LITHIUM CORPORATION OF AMERICA, INC.
General Offices:
Rand Tower, Suite H
Minneapolis 2, Minn.

IT TAKES TWO

DISPLAY ADVERTISING
• Arouses Interest • Creates Preference
DIRECT MAIL
• Gets Personal Attention • Triggers Action

After your prospect has been convinced by Display Advertising, he still must act. A personalized mailing piece, is a powerful action-getter. Send for our Industrial Direct Mail Catalogue. 150 lists available.



Mc GRAW-HILL
DIRECT MAIL LIST SERVICE

Direct Mail Division,
McGraw-Hill Publishing Co., Inc.
330 West 42 St., N. Y. 36, N. Y.

Please forward my free copy of the McGraw-Hill "Industrial Direct Mail Catalogue."

Name_____
Company_____
Address_____
City_____ State_____

As would be expected, the retail sales of high-potency (therapeutic) vitamins siphoned into just two major outlets:

	(million dollars) '53	'52	% change
Drug stores	80.3	77.9	+3.1
Hospitals	11.9	11.3	+5.2
Total	92.2	89.2	+3.4

Approximately half – around 55% –of the total value of packaged sales was sold in capsule, tablet, pill or lozenge form both last year and in 1952. Close to a third of the dollar sales took the form of liquids, elixirs, emulsions and syrups in both years. Parenterals (sterile injections) sliced out 11.4% of the total, and miscellaneous the balance.

Of the $227.9-million retail sales last year, and the $221.5 million in 1952, some 80% were made in drug stores, with a resale breakdown of 36% by prescription and 44% as nonprescription. Of the 20% of total dollar sales made through other outlets, close to 7% was by hospitals, the remainder by a miscellany including house-to-house sales, mail order firms, grocery stores, etc. A sidelight to pique the sellers' search for markets are the three retail outlets in the latter group that increased dollar volume the most last year over that in 1952: house-to-house, 29.4%; grocery stores, 8.5%, variety stores, 2.0%.

Fortified Flour: Except for vitamins sold by prescription, the man on the street decides for himself whether or not to buy packaged vitamins. But it is not always his choice whether he consumes supplementary vitamins in bakery products made from milled white flour. Reason: 26 states and Hawaii and Puerto Rico have already passed statutes requiring the fortification of all bread and flour sold within their borders.

These fortification requirements are mainly patterned after definitions and standards of identity established by the U.S. Federal Security Agency in May '52. Such standards had been decreed by the War Food Administration during 1943-46. There are teeth in present standards, too: they're enforceable under the misbranding provisions of Section 403 of the Food, Drug & Cosmetic Act.

The enrichment standard for bread specifies that each pound shall contain, among other substances, these vitamins: 10.0 to 15.0 mg. niacin, 1.1-1.8 mg. thiamin, and 0.7-1.6 mg. riboflavin. And the requirements per pound of flour are pegged even higher: 16.0-20.0 mg. niacin, 2.0-2.5 mg. thiamin, and 1.2-1.5 mg. riboflavin. Anywhere from 20-30% of the diet quota of these three vitamins may be provided by the enrichment of grain products.

Thus, when extended to current wheat production—22.5 billion lbs./year—the potential vitamin market adds up to about 400,000 kg. niacin, 50,000 kg. thiamin, 30,000 kg. riboflavin. These figures are based on the present trend among millers and bakers to include about 10% more than the minimum requirements in enriched flour.

More Potent Feeds: No less than for the enrichment of human food, nutritionists envision a rapidly growing market for vitamin supplementation of animal feeds. Approximately half the niacin and niacinamide output goes into feeds. Probably 25-30% of the reported production of riboflavin fortifies animal rations. And besides that quantity there is believed to be an additional unreported amount of riboflavin furnished the feed industry as by-product fermentation solubles from breweries, butanol manufacture, etc.

Right now, feed supplementation is thought to consume about 80% of the B_{12} sold. (Incidentally, '53 sales of B_{12} amounted to a profitable $14.3 million.) Present supplies of this vitamin, for which there is no commercial synthesis, are hitched mainly to antibiotic manufacture—B_{12} is a co-product. Feed makers are also buying much of available supplies of another member of the B complex; the calcium salt of pantothenic acid (B_4).*

* U.S. production of pantothenic acid and derivatives was 130 kg. in 1953, 117 kg. in 1952, 109 kg. in 1950.

Current Bulk Vitamin Prices

Vitamin	Price and Date Established ($/kg.)
Water-soluble	
Niacin	9.00 (Dec. '50)
Niacinamide	12.00 (Dec. '50)
C	16.00 (Sept. '54)
B_1	100.00 (Sept. '54)
B_2	100.00 (Dec. '52)
B_4 (D-calcium pantothenate)	75.00 (Mar. '47)
B_6	550.00 (Nov. '47)
B_{12} (cryst.)	245.00/gm. (Feb. '54)
Oil-soluble	
A (synthetic acetate, 500,000 units/gm.	$0.0725/gm.
D_2 (1 million units/gm.)	$0.015-0.020/gm.
D_3 (1 million units/gm. in vegetable oil)	$0.0275-0.0300/gm.

In the oil-soluble class of vitamins, the makers of synthetic vitamin A expect feed manufacturers to seek more and more of the stabilized product in preference to fish oil sources. Reason: the synthetic product deteriorates less, has greater potency, and is more uniform than the fish oil derivative.

Besides vitamin A there are two other oil-soluble vitamins, D_2 and D_3, with a strong foothold in the feed supplement industry. Although either D_2 (irradiated ergosterol) or D_3 (irradiated animal sterol) are effective for mammals, poultry can utilize only D_3. Therefore, some feed companies prefer the latter in order to cut down inventory and attendent costs.

By contrast, feed supplement makers consume negligible amounts of B_1, B_6, and C. These are ignored because of relative cost, availability, etc.

Plus for Future: Vitamin makers, sizing up animal feeds as having an especially vigorous future, take stock of these sales-nudging trends affecting all phases of the vitamin market:

- Consistently falling prices have continued to open new markets for bulk vitamins and to increase consumption.
- Legislative extension of flour- and cereal-product enrichment.
- Some increased vitamin content of standard dosage forms under the influence of lower prices and new findings in clinical research.

There's no denying a brief countertrend to domestic vitamin output this year from imports (estimated 1954 U.S. production: 666,000 kg. ascorbic acid and salts, and 99,000 kg. B_1). On the other hand, the long-term prospects are unquestionably bright for the vitamin industry abetted by usage-education, stepped-up per capita consumption, and improved production methods.

Inorganics, Gases Up

Chemical marketers this week have the facts behind the generally bright sales picture of inorganic chemicals and compressed gases in 1953. The annual Bureau of the Census report on the production and sale of inorganic chemicals and compressed gases for last year shows that the dollar volume of $2095 million of shipments and interplant transfers ran ahead of 1952's total by 14.7%.

Comparable '53-over-'52 increases were enjoyed by the three major groupings of the inorganic chemicals and gases. For example, that was exactly true for last year's dollar volume of chlorine and alkalis: the total of

HYDROCARBON
PANAFLEX
PLASTICIZERS
BN-1 LOW COST LIGHT COLOR

- Excellent for vinyl wire insulation.
- Improves electrical characteristics.
- Imparts superior heat and storage stability to vinyl plastisols and organisols.
- For partial replacement of primary plasticizers in vinyls.
- Complete replacement for dibutyl phthalate in synthetic rubbers.

PAN AMERICAN CHEMICALS
PAN AMERICAN DIVISION
Pan American Refining Corp.
122 EAST 42ND STREET · NEW YORK 17, N. Y.

ETHANOL FROM CARBIDE

FOR
High purity: both anhydrous and 190 proof.
Various specification grades: to suit your requirements.
Immediate shipments: in tank cars and tank trucks.
Proprietary Solvent: prompt drum deliveries of SYNASOL solvent from 50 warehouses located in principal industrial areas.

AS
a solvent . . . . extractant . . . . or *intermediate*, ethanol is most important for:

- lacquers and enamels
- varnishes and stains
- artificial leathers
- smokeless powder and cordite
- antiseptics and disinfectants
- cosmetics and pharmaceuticals

Methanol and isopropanol are two other industrially important alcohols readily available in commercial quantities from CARBIDE.

For prices and information, call or write the nearest CARBIDE office.

The term "Synasol" is a registered trade-mark of Union Carbide and Carbon Corporation.

CARBIDE AND CARBON CHEMICALS COMPANY
A Division of
Union Carbide and Carbon Corporation
UCC
30 E. 42nd St., New York 17, N. Y. Offices in Principal Cities
In Canada: Union Carbide Canada Limited, Toronto

You gotta be first...

to be best!*

*25 years ago, Alloy Fabricators started to build Stainless Steel, Monel, Inconel, Nickel and Aluminum Process Equipment. With this experience, naturally, they're your best bet today!

It's Still Our Only Business — And We Mind It Well!

CCS ALLOY FABRICATORS

DIVISION OF CONTINENTAL COPPER AND STEEL INDUSTRIES, INC.

PERTH AMBOY, NEW JERSEY

When regular products aren't quite right

penn-drake® will Custom refine

• WHITE OILS • PETROLATUMS
• ODORLESS SOLVENTS
• PETROLEUM SULFONATES

Materials with out-of-the ordinary specifications are refined on a custom basis by Penn-Drake. *Write us about your problem.*

penn drake PENNSYLVANIA REFINING COMPANY

Butler, Pennsylvania

702 Butler Savings & Trust Bldg. • Butler, Pa.
Branches: Cleveland, Ohio and Edgewater, N.J.

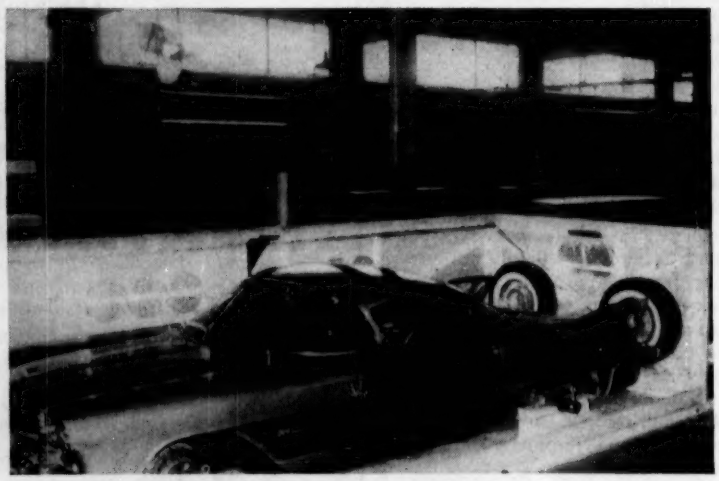
$357.5 million was an even 14% above the previous year's figure. A little shy of this percentage level was the total for compressed and liquefied gases, $196.1 million—up by 8% over '52's total. However, all other inorganic chemicals at $1541.6 million pulled ahead of 1952's shipments and interplant transfers by 16%.

Among these major categories, however, the pulling ahead was lively in some quarters, slacker in others. In the chlorine-alkali pasture, the chlorine value at $83.7 million was 17% above that of 1952, and a hearty 26% above the '51 total. At the same time, shipment-transfer volume of alkalis, although at $273.8 million last year and well above the chlorine outturning, only recouped the downturn suffered when '52's volume reached $241.7 million, down 9% from the previous year's $264.4 million.

The principal dollar earners of the compressed and liquefied gas grouping, however, rode out '53 with more modest gains than either chlorine or the alkalis. The total for elemental gases, $82.8 million, barely edged ahead of the 1952 total of $81.2 million, but was 11% ahead of '51's volume. The acetylene pace was only slightly quicker: last year's volume of $66.8 trotted ahead of '52's by 8%, ahead of 51's by 15%.

Among the major inorganic workhorses, sulfuric acid dollar sales climbed to $156.3 million, up a comfortable 15% over the even-keel sales volume of $136 million in both 1951 and 1952.

During the same interval, combined shipment-transfer value of synthetic ammonia, nitric acid, and ammonium compounds moved to $246.6 million, striding 9% ahead of last year's volume, and a whopping 35% over the 1951 figure.



For a Dry Market

DESICCANTS' water - blotting characteristics continue to be utilized for a host of diversified purposes—from drying air and gases to dehydrated packaging to prevent all forms of moisture damage. The latter, originally developed for military use, is currently finding widespread application in many nonmilitary outlets, particularly in relatively small packages of pharmaceuticals, candies, potato chips, and the like (*CW, Feb. 13, p. 70*).

This fall, however, silica gel—one of the principal desiccants—tackled what is believed to be the largest packaging job ever done for a "civilian" product—an automobile headed for overseas.

A General Motors Cadillac El Camino, on its way to England for the London Motor Show, was packed behind a moisture- vapor-proof barrier along with some 80 lbs. of Davidson Chemical's Protek-Sorb as further protection against sea air and moisture damage. The desiccant, in 16 "Desiccans," was installed (*see cut*) in the panels of the shipping crate.

IN STEARATES, A SPECK OF DIRT THIS BIG •

. . . can spoil a perfect recording

Our first consideration in making Metasap® Stearates is always—absolute purity. For Metasap Stearates are used in many things—from plastics, greases, paints to baby powders and cosmetics—where even a few tiny specks of foreign matter would be too many for the performance and the reputation of your product.

Therefore our reasoning is simple: "If *we* screen out those impurities first, *you* are spared the trouble." At Metasap we follow up with the most thoroughgoing series of fine screens, magnetic traps, and filters to be found in the industry. (We even filter the air.) These in addition of course to rigid quality control and the use of equipment which as nearly as possible rules out the chance of impurities in the first place.

For Stearates of supreme uniformity and quality, come to Metasap. Our technical service department will be glad to advise and assist you.

METASAP CHEMICAL COMPANY
Harrison, N. J.

Reg. U. S. Pat. Off.
METASAP CHEMICAL COMPANY

Chicago, Ill. • Boston, Mass.
Richmond, Calif. • Cedartown, Ga.

METASAP STEARATES

the cleanest stearates made

Send for our informative FREE book, "Metallic Soaps for Research and Industry."

Some industries served by Metasap

PAINT *makers solve pigment suspension problems with Metasap Stearates, producing primers and sanding sealers that have excellent filling qualities.*

LACQUER AND VARNISH *makers use Metasap Stearates to assure efficient flatting, and to obtain marproof finishes.*

PLASTICS *molders use Metasap Calcium, Zinc, and Barium Stearates to improve internal lubrication, which assures superior preforms, better finished products, and longer mold life.*

RUBBER *processors use Metasap Zinc and Magnesium Stearates to lubricate molds and prevent uncured stock from sticking.*

LUBRICANTS—*Grease makers use Metasap Stearates because these outstanding soaps afford a wide range of quality bases that help producers to meet any grease specifications.*

PAPER, *Textiles, Cosmetics, and other industries, and the Construction Field all call upon Metasap Stearates to perform important services.*

PFIZER'S LYNCH, TANNER, ENGLISH: New antibiotic data spotlight . . .

'Wonders' In the Offing

Between sessions of last week's second annual government symposium on antibiotics, the drafty green-marble lobby of Washington's old Social Security Building buzzed with a potpourri of unfamiliar sounds. There, in the tongues of 35 nations, an international battalion of researchers swapped trade talk, vigorously argued the merits of new compounds unveiled at the meeting.

Several of the new "wonder drug" candidates appear to be on the road to remunerative careers. But, like their gathered mentors, most were a long way from home.

Among the new entries are Sharp & Dohme's (West Point, Pa.) fungichromin, fungichromatin, and pleomycin; Rhone-Poulenc Research Laboratories' (Paris, France) spiramycine; Bristol Laboratories' (Syracuse, N.Y.) etamycin; Parke, Davis' (Detroit, Mich.) griseoviridin and viridogrisein; Chas. Pfizer's (Brooklyn, N.Y.) anisomycin and PA-105; Lederle's Puromycin; Upjohn's (Kalamazoo, Mich.) celesticetin.

Most are still in the *in vitro* stage of development, require considerable chemical and clinical research to elucidate their practical value.

• An outstanding newcomer, Pfizer's anisomycin, shows signs of making the grade commercially. Although the compound's exact structure is not known, it has the empirical formula $C_{14}H_{18}NO_4$ and melts at 140-141 C. Biologically, it is less of a mystery, shows significant activity against fungi and protozoa but is inactive against bacteria. Anisomycin has already been tried on humans, could be the answer to certain persistent parasitic infections that defy treatment. Chemist Fred Tanner, Jr., is probing anisomycin's chemical nature, and John Lynch and Arthur English (at the Pfizer Therapeutic Institute, Maywood, N.J.) are exploring its effect on parasites.

• Pfizer's PA-105, isolated from culture filtrates of a strain of *Streptomyces antibioticus*, looks like a potentially valuable foe of Gram-positive bacteria, has given promising results in tests with experimentally infected animals.

• Similarly, Upjohn's new antibiotic, celesticetin, fights Gram-positive microorganisms. Activity *in vitro* has been noted against micrococci, streptococci, pneumococci, and clostridia, causative agents of pneumonia and several other infectious diseases. It has very limited antifungal activity.

• Sharp and Dohme's fungichromin, on the other hand, is an unmistakable antifungal agent, produced in good yield by a strain of *Streptomyses cellulosae*. It is a pale-yellow compound (empirical formula $C_{35}H_{60-61}O_{13}$, molecular weight of 690 ±12). Fungichromatin, a related compound, differs mainly in its ultraviolet absorption characteristics. Both of these materials are slightly soluble in water, soluble in a large variety of organic solvents (e.g., alcohol, acetone, esters, and ethers) but insoluble in aliphatic hydrocarbons.

• Pleomycin is active against both Gram-positive and Gram-negative bacteria, but tissue irritation caused by local application makes its therapeutic use unlikely.

• More encouraging clinical results (on mice), peg spiramycine as a well-tolerated treatment for infections caused by Gram-positive bacteria resistant to other antibiotics. Its source: culture of a new Streptomyces species, *Streptomyces ambofaciens*.

• Bristol Laboratories is stirring up new hope for tuberculars in revealing that its experimental polypeptide antibiotic, etamycin, inhibits tuberculosis germs *in vitro*. *In vivo* tests on mice also disclosed activity against *D. pneumoniae*, with low toxicity. Etamycin, obtained from an unidentified strain of *Streptomyces*, is removed from the culture liquor by solvent extraction.

• Parke, Davis' broad-spectrum antibiotics griseoviridin (GV) and viridogrisein (VG) stem from culture filtrates of actinomycetes via a solvent extraction and alumina chromatography route. GV is particularly effective *in vitro* against strains of *Clostridium*, *Corynebacterium*, *Diplococcus*, *Escherichia*, *Hemophilus*, *Neisseria*, *Shigella*, and *Streptococcus*. It has proved active against pertussis infection in mice, and clinical bovine coli mastitis. VG is well tolerated locally by cows, and orally by mice and dogs. It cures bovine staphylococcal and streptococcal mastitis, and intestinal amebiasis in rats and dogs. Data on its potential value in human therapy is not yet available.

Sponsored by the U.S. Dept. of Health, Education & Welfare and the Food & Drug Administration's antibiotics division, the five-day meeting was attended by upwards of 800 (of which 625 were officially registered).

Sidelight: ministers of health and distinguished physicians from more than a score of foreign countries attended the symposium as guests of Lederle Laboratories (division of American Cyanamid Co.). Later they participated in a special two-day Lederle antibiotics conference. All told, the visitors enjoyed a two weeks' sojourn at company expense.

Keynote of the antibiotic week was sounded by National Institutes of Health Director William Sebrell,* who

* Speaking at a Lederle-sponsored welcoming luncheon in the National Press Building.

USS

PHENOLS,

Resin Grade Phenol—Ortho Cresol mixtures to meet commercial requirements. Used principally for the manufacture of phenolformaldehyde resins and as a selective solvent in the refining of lubricating oils.

USS

ORTHO CRESOL

Used for the manufacture of ortho-cresotinic acid (dye intermediate), disinfectants, synthetic tanning agents and insecticides. It is used in resin grade phenols to control the quality of the resin.

Which of these TAR ACIDS do you need?

USS

META PARA Cresol

Used in disinfectants, resins and as an organic intermediate.

All of these are produced by UNITED STATES STEEL

USS

CRESYLIC ACIDS

(Resin Grades, Tricresylphosphate Grades and Flotation Grades) are mixtures of Cresols and close cut fractions of higher boiling tar acids, produced to meet commercial requirements. They are used principally for the manufacture of phenolic type resins, plasticizers and as flotation agents.

USS

SPECIAL GRADE CRESOLS

Mixtures of Phenol, Cresols and other close cut fractions to meet commercial requirements. Used principally for the manufacture of special purpose phenolic type resins and varnish. They are also used for the manufacture of synthetic adhesives, disinfectants and insecticides, dyes, intermediates, inhibitors of gum formation and photographic chemicals.

For more information about these Tar Acids and the complete line of USS Coal Chemicals, just contact our nearest Coal Chemical Sales Office, or write United States Steel Corporation, 525 William Penn Place, Pittsburgh 30, Pa.

USS Coal Chemicals

USS

4-299

UNITED STATES STEEL

VISITING FIREMEN*: For new antibiotics, polyglot trade talk . . .

. . . a measure of optimism . . .

. . . and a stiff challenge.

gave probers a pat on the back for recent great strides in disease control by antibiotics. "But," he admonished, in the next breath, "we are still unable to control influenza, poliomyelitis, upper respiratory infections and the many day-to-day illnesses that have a much more important bearing on health and productivity than is commonly acknowledged."

A call to arms against virus maladies, Sebrell's words spotlight an area that may ultimately provide antibiotics researchers with their stiffest challenge.

Chemical Road Work

Last week, joint government-industry research aimed at finding a cheap, and broadly useful, soil stabilizer rolled into high gear.

First announced some 10 weeks ago (*CW, Aug. 21, p. 100*), the program involves cooperative research agreements between the Bureau of Public Roads and various chemical companies.

BPR has signed formal agreements with American Cyanamid, Dow, Du Pont's Grasselli Chemicals Dept., and Westvaco Chlor-Alkali division of Food Machinery and Chemical Corp.; an informal agreement is in force with Rohm & Haas; agreements are about to be signed with General Aniline & Film, and with the Tropical Agricultural Research Laboratory of Southport, N.C. Four other companies may also get into the act.

Basis of understanding between BPR and the chemical concerns are "agreements," rather than contracts, since the stabilization research will be strictly cooperative. The bureau will share its knowledge of soils and road building requirements; the companies, their knowledge of chemicals.

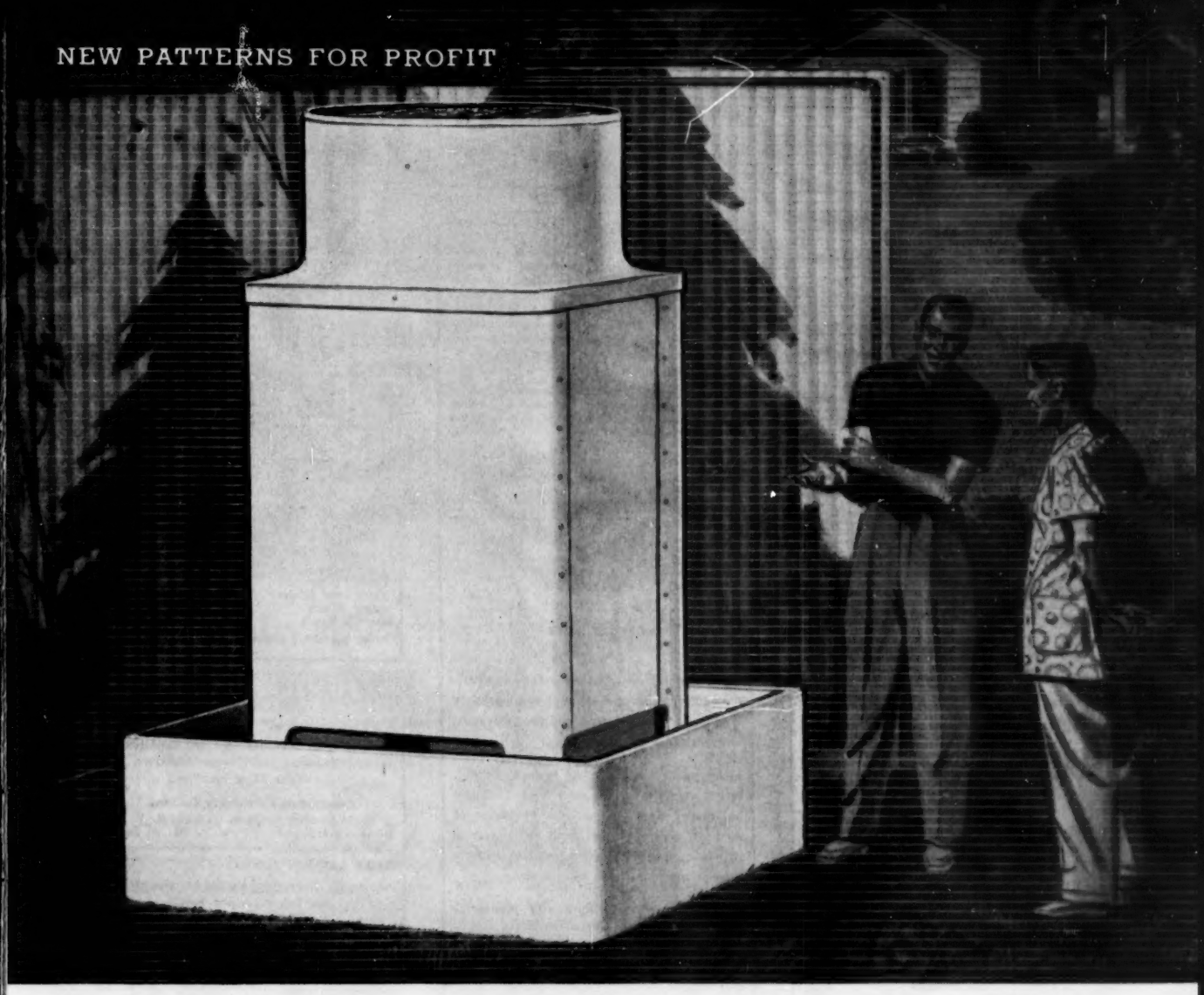
Since no money will be changing hands, the patent rights on any materials developed will belong solely to the companies.

Initial research work in testing chemical compositions will be carried out by the bureau's laboratories at Gravelly Point, Va., near the Washington, D.C., National Airport. Companies, of course, will conduct chemical research in their own facilities. When (and if) a material that seems satisfactory is found, the bureau will arrange with a state highway department to build a section of experimental road incorporating the additive in the road bed.

While bureau officials are hopeful

* Top (l. to r.): Sweden's Douglas and Lindgren, Denmark's Andersen, and Norway's Vogt. Middle (l. to r.): Germany's Hess, Switzerland's Loffler and Germany's Bansi. Bottom (l. to r.): India's Mody, Thailand's Kanchanaranya and Prablia.

NEW PATTERNS FOR PROFIT



Could Easily Assembled Reinforced Plastic Cooling Towers Cut "Water Cost," Spur Built-in Home Air Conditioning?

Excessive water use—that's been a major drawback to built-in air conditioning for private homes...when a small "custom built" cooling tower was beyond the "budget." But a standardized, molded plastic cooling tower might be the answer!

The "home size" cooling tower illustrated provides 48 cubic feet for standard redwood filling . . . consists of six pieces, easily assembled from just ***four*** separate moldings; could be shipped "knocked down." The attractive, colorful reinforced plastic is the same material used in glass-reinforced plastic sports car bodies, flat and corrugated building panels, molded bath tubs, and hundreds of other applications. It is a "no maintenance" material, light in weight, rot-proof, chemically resistant.

The cooling tower shown is a preliminary design . . . but worked out in all details except the filling. If you would be interested in manufacturing (or distributing) this tower, contact Monsanto. If you'd like to study a set of engineering drawings showing the design of the molded cover, sides, sump and details of assembly, send $1.00 to cover handling and mailing. Manufacturers who prefer to subcontract for reinforced plastic parts can reach reliable custom molders through Monsanto.

Monsanto is a major producer of **STYRENE MONOMER, PHTHALIC** and **MALEIC ANHYDRIDE**, and **FUMARIC ACID** . . . basic raw materials used in the manufacture of polyester resins. For application details, write or call **MONSANTO CHEMICAL COMPANY, ROOM 1503, PLASTICS DIVISION, SPRINGFIELD, MASS.**

MONSANTO
CHEMICALS—PLASTICS

SERVING INDUSTRY WHICH SERVES MANKIND

tracers...to opportunities in the chemical process industries

REPLIES (Box No.): Address to offices nearest you
NEW YORK: 330 W. 42nd St. (36)
CHICAGO: 520 N. Michigan Ave. (11)
SAN FRANCISCO: 68 Post St. (4)

MANAGEMENT SERVICES

ENGINEERING CORPORATION OF AMERICA

Chemical & Petro-Chem Process Plants
Industrial Waste Treatment Projects
Air Pollution Abatement
Special Mechanical & Process Equipment

205 Grove Street Westfield, N. J.
Westfield 2-7117

EVANS

Chemical Research—Processes-Products
Development Problems
Complete Laboratory—Pilot Plant
Mechanical & Optical Sections
Ask for new Scope Sheet C
listing over 100 of our activities

EVANS RESEARCH & DEVELOPMENT CORP.
250 East 43rd St., N. Y. 17, N. Y.

S. H. KILLEFFER

- TECHNICAL PUBLICITY
- TECHNICAL SALES LITERATURE
- ANNUAL REPORTS
- COMPANY HISTORIES
- BIOGRAPHIES
- TECHNICAL GHOST WRITING

Telephone: SPencer 9-8821
188 Westchester Avenue Tuckahoe 7, N. Y.

THE C. W. NOFSINGER COMPANY

Personalized Engineering Service
PETROLEUM REFINING AND CHEMICAL INDUSTRIES

- Surveys—Planning—Process Design
- Engineering Design—Drafting—Procurement
- Supervision of Construction and Operation

906 Grand Avenue, Kansas City 6, Missouri

JAMES P. O'DONNELL

Engineers

CHEMICAL PROCESS PLANTS

Design—Procurement—Construction Supervision

39 Broadway, New York 6

SIRRINE

ENGINEERS

Plant Design & Surveys covering Chemical Electrochemical and Metallurgical Production; Industrial Waste Disposal; Water Supply & Treatment; Analysis & Reports

J. E. SIRRINE CO.
Greenville South Carolina

Wisconsin Alumni Research Foundation

Project Research, Consultation, and Production Control Services in Biochemistry, Chemistry, Bacteriology, Entomology, and Pharmacology.

Write for price schedule

Wisconsin Alumni Research Foundation
P.O. Box 2059-G • Madison 1, Wisconsin

EMPLOYMENT

Selling Opportunity Offered

Assistant for Sales Manager. Established and growing firm in New York City area. Chemical training and sales experience essential. Plastics and plasticizer knowledge desirable. Please give qualifications and experience. RW-4546, Chemical Week.

Position Wanted

Chemical Manager: Qualified to direct quality control and product development program. Fully experienced in all phases of asphalt and vinyl asbestos tile technology. Knows production, engineering, and research. Married, excellent health, willing to relocate. PW-4496, Chemical Week.

EMPLOYMENT

Positions Vacant

VINYL POLYMER CHEMIST

Well established national manufacturer is extending its line of products to include polyvinyl acetate emulsions and other elastomeric polymers. A chemist or chemical engineer with specific experience in polyvinyl acetate polymerization and polymer development is needed to spearhead the development, manufacture and application of these products. Excellent opportunity to grow with an expanding organization.

Send complete information on education, experience, reference and salary desired. All replies confidential. Our employees have been informed of this advertisement.

P4351 Chemical Week
330 W. 42 St., New York 36, N. Y.

Position Vacant

SALES MANAGEMENT
CHALLENGING

OPPORTUNITY

Large national manufacturer expanding distribution of processing equipment and machinery used in the chemical, food, and pharmaceutical industries.

Major consideration is ability to direct, control, and stimulate expanding sales force. Technical background preferably includes knowledge of methods and equipment used in processing chemicals, foods, and pharmaceutical products through mechanical or chemical means.

Five figure salary to start with substantial commission arrangement.

Please forward resume of background and salary requirements for confidential review.

P 4513 Chemical Week
520 N. Michigan Ave., Chicago 11, Ill.

Selling Opportunity Wanted

If you need sales representation on industrial chemicals or pharmaceuticals in metropolitan New York or Connecticut I am qualified to serve you. O. R. Brunkow, 489 Fifth Avenue, New York 17, N.Y.

CHEMICALS WANTED

SURPLUS WANTED

CHEMICALS, PHARMACEUTICALS, OILS
PLASTICIZERS, RESINS, DYES
SOLVENTS, PIGMENTS, ETC.

CHEMICAL SERVICE CORPORATION
96-02 Beaver Street, New York 5, N. Y.
HAnover 2-6970

BUYERS OF SURPLUS

CHEMICALS—OILS—SOLVENTS
DRUGS—RESINS—WAXES
PLASTICS—COLOR—ETC.

BARCLAY CHEMICAL COMPANY, INC.
75 Varick Street New York 13, N. Y.
WORTH 4-5120

EQUIPMENT--used-surplus

For Sale

Dry-Ice Crusher, takes full cake, makes ½ to 1½", Miller & Son, 36 Meadow, E. Orange, 12, N. J.

Filter Presses, (6) Shriver 30" x 30". Cast Iron, Open Dely. Perry Equip. 1415 N. 6th, Phila. 22, Pa.

For Prompt Disposal 4-Tons Graphite Electrode plates. 8¾" x 29¾" weighing approx. 10-lbs. each. Please address all inquiries to: Ex-Trans-Im Limited, 336 Watford Way, London. N.W.4.

Hammermill 36 x 24 Jeffrey B2 Darien Corp., 60 E. 42nd St., N. Y., N. Y.

Heat Exchangers, Steel, Shell & Tube, 1200 sq. ft. ASME. Unused. Perry Equip. 1415 N. 6th St., Phila. 22, Pa.

One 16" Type R Elliott Twin Water Strainer. In good operating condition. Bargain price. W. L. Broaddus, Phone 844, P. O. Box 479, Hopewell, Va.

Stainless Steel Type 347 Jacketed Vacuum Receiver, 2600 gal. cap. Perry Equip. Corp. 1415 N. 6th, Phila. 22, Pa.

Wanted

WANTED

MACHINERY OR PLANT INCLUDING

Vacuum Dryers	Columns
Filter Presses	Pulverizers
Heavy Duty Mixers	Packaging and Wrapping Equipment
Rotary Filters	S/S and non-corrosive
Reaction Kettles	Storage Tankage

P. O. Box 1351, Church St. Sta. N. Y. 8, N. Y.

DEALERS in used-surplus

Buy With Confidence

Send us your inquiries for your requirements in Used Chemical and Process Machinery.
—"our 37th year"—

Consolidated Products Co., Inc.
104 Observer Highway, Hoboken, N. J.
Hoboken 8-4425 N. Y. Tel. Be 7-0800

WORLD'S LARGEST INVENTORY

MOTORS—GENERATORS—TRANSFORMERS
New and Guaranteed Rebuilt
1 H.P. to 2500 H.P.
FREE CATALOG

ELECTRIC EQUIPMENT CO.
P. O. Box 51 Rochester 1, N. Y.

SPECIAL SERVICES

Truland Chemical & Engineering Co., Inc.

AVAILABLE CUSTOM REFINING FACILITIES
Distillation, Extractions
Separations, Fractionations
WANTED All Types of Crude Mixtures
Drum Lots - Tank Cars
By-Products, Residues, Wastes
Contaminated Solvents

Box 426, Union, N.J. UNionville 2-7360

Xmas Gift Service—Free of charge. To each person on your Xmas list: I will send an attractive Xmas gift card, with your name as donor, listing 24 leading magazines such as Life, Readers Digest, Esquire, etc. They select their favorite one and return to me in prepaid envelope. First copy arrives Xmas—you are then billed at reduced Xmas rates. Max Prager, 384 E. 98 St., Bklyn. N. Y. UL 5-3935. *"Representing national magazines since 1937"*

350 U.S. Government disposal agencies selling miscellaneous surplus, machinery & chemicals. Mail $3.00 for list & procedure. Brody P. O. Box 8-B Sunnyside 4, N. Y.

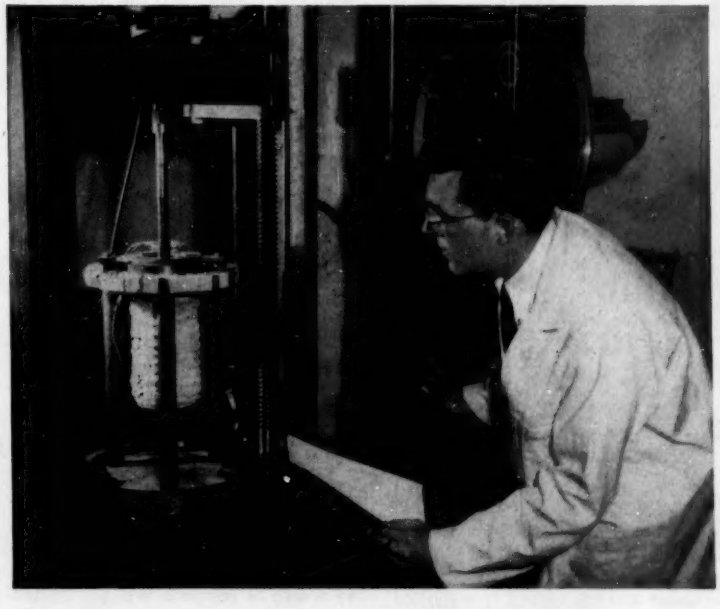
Contract Work Wanted

Chemical manufacturer seeks sub-contract work in the manufacture of organic and inorganic chemicals, intermediates. Completely equipped for organic synthesis. CWW-4457, Chemical Week.

Polson Tool & Die Co. Complete service in tool and die making. We manufacture injection molds, jigs, fixtures and also make electro plated stencils, silk screens and samples. 25 Sterling Street, Clinton, Massachusetts.

Ingenuity's Rewards

A LITTLE INGENUITY goes a long way in the laboratory, where the lack of a needed tool can bring a costly research project to a dead halt. This desirable human attribute is clearly in evidence at Canadian Industry Ltd.'s new McMasterville (Que.) research laboratories. The low-temperature distillation unit (*above*), a big help in determining the purity of CIL's chlorine, was designed by laboratory staffers. Similarly, the improved apparatus (*below*) for determining polyethylene extrusion pressures is the creation of resourceful company researchers. An adapted Tinius-Olsen tensile-strength tester, the instrument is yielding important information on molten flow properties of the plastic. Just placed in operation, the new CIL research facilities comprise a 12-laboratory extension of the firm's two-story central research laboratory.



NOTICE

A new catalog of some 3500 Eastman Organic Chemicals has come out. If you have not already received your copy of *List No. 39*, you can get it by writing to Distillation Products Industries, Eastman Organic Chemicals Department, Rochester 3, N. Y. (Division of Eastman Kodak Company).

NOW OVER 5100 BIOS CHEMICALS

- Sodium Chloroplatinate
- Sodium Dithionite
- Sodium Dodecylbenzene-sulfonate
- Sodium Fluoroacetate
- Sodium Hyponitrite
- Sodium Monofluorophosphate
- Sodium Myristyl Sulfate
- Sodium α-Naphthylphosphate
- Sodium Nucleate
- Sodium Pentacyanoamino-ferroate
- Sodium Pentacyanoaquo-ferroate
- Sodium Protalbinate
- Sodium Thioselenite
- Sodium Titanium Fluoride
- Sodium Tungsten Fluoride
- Solamine
- Sorbitol Monooleate
- Sorbose-1-phosphate
- Squalene
- Steapsin
- Stearaldehyde
- Stearoylcholine Chloride
- Stilbene Dibromide

ASK FOR OUR NEW COMPLETE CATALOGUE

BIOS Laboratories Inc.
17 West 60th St. New York 23, N. Y.
Plaza 7-8171

CHEMICAL WEEK • ADVERTISERS INDEX
NOVEMBER 13, 1954

ADVANCE SOLVENTS & CHEMICAL CORP. 45
Agency—Sanger-Funnell, Inc.
ALLOY FABRICATORS DIV., CONTINENTAL COPPER & STEEL INDUSTRIES, INC. T92
Agency—Hiram Asbe Adv., Inc.
ALUMINIUM LIMITED SALES, INC. 77
Agency—J. Walter Thompson Co.
AMERICAN BITUMULS & ASPHALT CO. 41
Agency—Wank & O'Rourke Adv. Agency
AMERICAN POTASH & CHEMICAL CORP. 60
Agency—The McCarty Co.
ANSUL CHEMICAL CO. 75
Agency—Kenyon & Eckhardt, Inc.
ANTARA CHEMICALS DIV., GENERAL ANILINE & FILM CORP. 83
Agency—J. Hayden Twiss Adv.
ARCHER-DANIELS-MIDLAND CO. 78
Agency—Bayless-Kerr Co.
AUTOMATIC SPRINKLER CORP. OF AMERICA 65
Agency—The Robert A. Joyce Co.
BALL BROTHERS CO. 81
Agency—Applegate Adv. Agency
BECKMAN INSTRUMENTS, INC. 6
Agency—Darwin Clark Co.
BEMIS BROTHERS BAG CO. 62
Agency—Gardner Adv. Co.
BIOS LABORATORIES, INC. B99
Agency—Firestone Adv., Inc.
BUFFALO ELECTRO-CHEMICAL CO. 59
Agency—John Mather Lupton Co., Inc.
BUTLER MANUFACTURING CO. 74
Agency—Aubrey, Finlay, Marley & Hodgson, Inc.
CARBIDE & CARBON CHEMICALS CO., A DIV. OF UNION CARBIDE & CARBON CORP. ..... Back Cover B91
Agency—J. M. Mathes, Inc.
CELANESE CORP. OF AMERICA 17
Agency—Ellington & Co.
CHASE BAG CO. 27
Agency—William Hart Adler, Inc.
CHEMICAL SOLVENTS, INC., THE C. P. T76
CHURCH & DWIGHT CO. T82
Agency—J. Walter Thompson Co.
COLTON CHEMICAL CO. 46
Agency—The W. N. Gates Co., Inc.
COMMERCIAL SOLVENTS CORP. 39
Agency—Fuller & Smith & Ross, Inc.
CONTINENTAL CAN CO. 2
Agency—Batten, Barton, Durstine & Osborn, Inc.
DEWEY & ALMY CHEMICAL CO. 88
Agency—Horton-Noyes Co.
DISTILLATION PRODUCTS INDUSTRIES, DIV. OF EASTMAN KODAK CO. T99
Agency—Charles L. Rumrill & Co.
DIXIE CARRIERS, INC. B82
Agency—Foote, Cone & Belding Adv.
EASTMAN CHEMICALS PRODUCTS, INC. 25
Agency—Kenyon & Eckhardt, Inc.
EIMCO CORP., THE 5
Agency—The Matsie Co.
EMERY INDUSTRIES, INC. 43
Agency—Ruthrauff & Ryan, Inc.
FISCHBEIN CO., DAVE 4
Agency—Fischbein Adv. Agency
GENERAL MILLS, INC. 7
Agency—Knox Reeves Adv., Inc.
GIRDLER CO. 72
Agency—Griswold-Eshlemann Co.
GLYCERINE PRODUCERS ASSOC. 80
Agency—G. M. Basford Co.
GOODRICH CHEMICAL CO., THE B. F. .. 67
Agency—Griswold-Eshlemann Co.
GOODYEAR TIRE & RUBBER CO., INC. .. 1
Agency—Kudner Agency, Inc.
GRAVER TANK & MANUFACTURING CO. 87
Agency—The Buchen Co.
GREAT LAKES CARBON CO. 37
Agency—Davis-Parsons, Inc.
HADLEY BROS.—UHL CO. B76
Agency—Whitehead & Sprague, Inc.
HARSHAW CHEMICAL CO. 8
HERCULES POWDER CO. 11
Agency—Fuller & Smith & Ross, Inc.
INDIANA DEPT. OF COMMERCE & PUBLIC RELATIONS 83
Agency—Mark Gross & Assoc.
INDUSTRIAL PROCESS ENGINEERS .. 58
Agency—Schenck Adv. Agency, Inc.
INLAND STEEL CO. 12
Agency—Weiss & Geller, Inc.
KOPPERS CO. 79
Agency—Batten, Barton, Durstine & Osborn, Inc.
KRAFT BAG CORP. 73
Agency—Arthur A. Judson, Inc.
LITHIUM CORP. OF AMERICA B90
Agency—Keystone Adv., Inc.
MAAS CHEMICAL CO., A. R. 58
Agency—Heintz & Co., Inc.
MARINE TRANSPORT LINES, INC. 86
METAL HYDRIDES, INC. 54
Agency—Creamer-Trowbridge Co.
METASAP CHEMICAL CO. 93
Agency—Lewin, Williams & Saylor, Inc.
MICHIGAN CHEMICAL CORP. 84
Agency—Wesley Aves & Assoc.
MONSANTO CHEMICAL CO. 49-54, 97
Agency—Gardner Adv. Co.
NASHVILLE, CHATANOOGA & ST. LOUIS RAILWAY 48
Agency—Doyne Adv. Agency
NIAGARA ALKALI CO. 47
Agency—Hazard Adv. Co.
NIAGARA BLOWER CO. 40
Agency—The Moss Chase Co.
OKLAHOMA PLANNING & RESOURCES BOARD 61
Agency—George Ande Adv.
PAN AMERICAN CHEMICAL T91
Agency—Grant & Wadsworth, Inc.
PENNSYLVANIA REFINING CO. B92
Agency—Walker & Downing Industrial Adv.
PHILADELPHIA QUARTZ CO. B68
Agency—The Michener Co.
POWER STAINLESS PRODUCTS CO. 3
Agency—Reidl & Freede, Inc.
PRITCHARD & CO., J. F. 63
Agency—Carter Adv. Agency, Inc.
REFINED PRODUCTS CORP. 80
Agency—James Cirille Adv.
REICHHOLD CHEMICALS, INC. ..Third Cover
Agency—MacManus, John & Adams, Inc.
REYNOLDS METALS CO. 57
Agency—Clinton E. Frank, Inc.
RHODIA, INC 36
Agency—J. Hayden Twiss Adv.
ROHM & HAAS CO. 69
Agency—Arndt, Preston, Chapin, Lamb & Keen, Inc.
SEABOARD SHIPPING CORP. T68
Agency—Colton Adv. Agency
SHELL CHEMICAL CORP. 21
Agency—J. Walter Thompson Co.
SHELL OIL CO. 29
Agency—J. Walter Thompson Co.
SHERWOOD REFINING CO. B82
SHIPPERS' CARLINE CORP. 23
Agency—French & Preston, Inc.
SOLVENTS & CHEMICALS GROUP, THE 64
Agency—Russel M. Seeds Co.
SPENCER CHEMICAL CO. 31
Agency—Bruce B. Brewer & Co.
STAUFFER CHEMICAL CO. 22
Agency— J. Hayden Twiss Co.
STEPAN CHEMICAL CO. 32
Agency—Frank C. Nahser, Inc.
TRUBEK LABORATORIES, INC. 71
Agency—Ray Ellis Adv.
UNION CARBIDE & CARBON CORP., CARBIDE & CARBON CHEMICALS CO., ... Back Cover, B91
Agency—J. M. Mathes, Inc.
U. S. STEEL CORP., COAL CHEMICALS DIV. 95
Agency—Batten, Barton, Durstine & Osborn, Inc.
WALLACE & TIERNAN INC. 66
Agency—Branstater Assoc., Inc.
WESTVACO CHEMICAL DIV., FOOD MACHINERY & CHEMICAL CORP ..... Second Cover
Agency—James J. McMahon, Inc.
WYANDOTTE CHEMICALS CORP. 35
Agency—Brooke, Smith, French & Dorrance, Inc.

tracers SECTION
(Classified Advertising)
H. E. Hilly, Mgr.

CHEMICALS: Offered/Wanted 98
EMPLOYMENT 98
EQUIPMENT: Used/Surplus New
For Sale 98
Wanted 98
MANAGEMENT SERVICES 98
SPECIAL SERVICES 98

ADVERTISING STAFF

ADVERTISING DIRECTOR — B. E. Sawyer
ADVERTISING SALES MGR. — R. S. Muller
BUSINESS MGR. — A. J. Mangold
PROMOTION & RESEARCH MGR. — F. E. Lesner
MARKET SERVICE MGR. — A. Losick

Atlanta 3 ..... William D. Lanier, 1321 Rhodes-Haverty Bldg., Walnut 5778-2383
Chicago 11 ..... Alfred D. Becker, Jr., Steven J. Shaw, 520 N. Michigan Ave. Mohawk 4-5800
Cleveland 15 ..... Vaughn K. Dissette, 1510 Hanna Bldg., Superior 7000
Dallas 1 ..... James Cash, First National Bank Bldg., Prospect 7-5064
Los Angeles 17 ..... Jos. H. Allen, 1111 Wilshire Blvd., Madison 6-4323
New York 36 ..... Knox Armstrong H. L. Brown, L. Charles Todaro, 330 West 42 St., LOngacre 4-3000
Philadelphia 3 William B. Hannum, Jr., Charles F. Onasch, Architects Bldg., 17th & Sansom Sts., RIttenhouse 6-0670
San Francisco 4 ..... Ralph E. Dorland, 68 Post St., Douglas 2-4600
Boston 16 ..... 350 Park Square Building Hubbard 2-7160
Detroit 26 ..... 856 Penobscot Bldg., Woodward 2-1793
Pittsburgh 22 ..... 738 Oliver Bldg., Atlantic 1-4707
St. Louis 8 ..... 3615 Olive St., Continental Bldg., Lucas 4867

RESEARCH . . . . . .

that a material will be found, they are not expecting miracles. Perhaps the biggest drawback to success is economic; a new stabilizer must be inexpensive to find widespread use in soil stabilizing. Cost target for new chemicals: material to treat a ton of soil shouldn't cost over $2-2.50. This is roughly comparable to 10-13¢/cu. ft. of soil.

This figure is as low as it is, first because road-bed stabilization must be literally dirt-cheap. It's looked upon as a way to get around having to haul in sand and gravel for the highway bed upon which the concrete slab or asphalt wearing surface rests.

It's also possible, in some cases, to use cement as a stabilizing material. The fact that some 10-12% by volume of cement (costing roughly 1¢/lb.) will stabilize some soils, also limits use of more expensive materials. There are, however, some soils (e.g., heavy clays) on which cement won't work.

Offsetting these economic obstacles, is a considerable incentive in the guise of a new chemical market measured by thousands of miles of new highways now being planned for construction.

•

Acres for Expansion: General Foods recently completed negotiations to acquire 55 acres near Tarrytown, N.Y., for a new enlarged research center. The purchase is contingent on approval of a zoning change affecting a portion of the property. The company has outgrown its present laboratory facilities in Hoboken, N.J., selected the new site because it combines a suburban location with proximity to New York City and its institutions of higher education.

•

Reagent News: Arapahoe Chemicals, Inc. (Boulder, Colo.) now offers a high-purity (99.5%) sodium *m*-periodate for use in determining glycerol by the American Oil Chemist's Society's official method.

•

Common Code: If you're now using or plan to use the National Research Council's code for classifying chemicals, NRC would like to have particulars and will be glad to answer questions. Handling the correspondence: Chemical - Biological Coordination Center, National Research Council, 2101 Constitution Ave., Washington 25, D.C.

•

Big Bill: Newly disclosed figures by Armour Research Foundation of Illinois Institute of Technology (Chicago) show that an all-time high of $11,118,144 worth of research was performed by the institute during fiscal 1953-54.

Good news from RCI for **PHTHALIC ANHYDRIDE** buyers!

Whether you're a new customer for RCI PHTHALIC ANHYDRIDE, or an old account, this basic fact works out to *your* advantage:

Reichhold is one of the world's fastest-expanding chemical companies.

What this means to you is that Reichhold — intent on building and holding customers — has geared itself to give superior service. Testimony to this is RCI's vast and growing production, warehouse reserves in all major areas of the country, expert technical counsel from scores of plants and sales offices.

What about the product, RCI PHTHALIC ANHYDRIDE? Simply this: Reichhold's "know-how" in chemical production assures you of high quality in this basic chemical.

We suggest you sample RCI PHTHALIC ANHYDRIDE. It's available in flake form (in bags) or in liquid form for tank car delivery.

For specific details, address Sales Manager, Chemical Division, Reichhold Chemicals, Inc., 630 Fifth Avenue, New York 20, N. Y.

If you make . . . Synthetic Resins • Plasticizers
Dyestuffs • Liquid Insect Repellents
investigate RCI Phthalic Anhydride

REICHHOLD CHEMICALS, INC. | 525 NORTH BROADWAY, WHITE PLAINS, N.Y.

REICHHOLD

RCI

Creative Chemistry . . .
Your Partner
in Progress

Formaldehyde
Glycerine
Maleic Anhydride
Phthalic Anhydride
Phenol
Sodium Sulfate
Sodium Sulfite

Precise control so necessary to quality production of Phthalic Anhydride is maintained by these sensitive instruments at RCI's Detroit plant.

"CARBOWAX"
Trade-Mark

LIQUID POLYETHYLENE GLYCOLS

Polyols you can depend on for . . . STEADY AVAILABILITY
UNIFORM HIGH QUALITY

These water-white, non-volatile liquids are truly versatile chemicals. They are humectants, solvents, and lubricants and yet are completely soluble in water. These products are heat-stable, inert to many chemical agents, and do not hydrolyze or deteriorate on standing. They are powerful solvents for dyes, drugs, resins, proteins, and other difficultly soluble materials, and leave no residual odor in end products. The liquid polyethylene glycols are much less volatile than glycerol and are 40 to 70 per cent as hygroscopic. Within that range you can get any humectancy you need. In addition, the two hydroxyl groups can be esterified with organic acids. The diesters of fatty acids form plasticizers with good low-temperature properties and the monoesters form excellent surface-active agents that are not affected by mild acids or hard water.

CARBOWAX liquid polyethylene glycols are available for immediate shipment in four closely controlled molecular weight ranges—200, 300, 400, and 600. Carbide and Carbon's experience in the production of these materials assures you that they meet rigid quality controls and guaranteed high quality.

IT'S EASY to see how these polyethylene glycols can serve you. Try them in your manufacturing process wherever polyols such as glycerol are used. Just call or write our nearest office for trial samples and additional technical help. In Canada: Carbide Chemicals Sales Company, Division of Union Carbide Canada Limited, Toronto.

CARBIDE AND CARBON CHEMICALS

Carbide and Carbon Chemicals Company
A Division of
Union Carbide and Carbon Corporation
30 East 42nd Street New York 17, N. Y.

COUNT THE WAYS THEY CAN HELP YOU AS . . .

Humectants		**Non-Ionic Surface-Active Agents**
Lubricants	**Intermediates for:**	**Suspending Agents**
Solvents		**Thickening Agents**
Couplers		**Foam Stabilizers**
		Plasticizers

The term "Carbowax" is a registered trade-mark of Union Carbide and Carbon Corporation.